PIP20 / PIP22 BIOS V2.xy

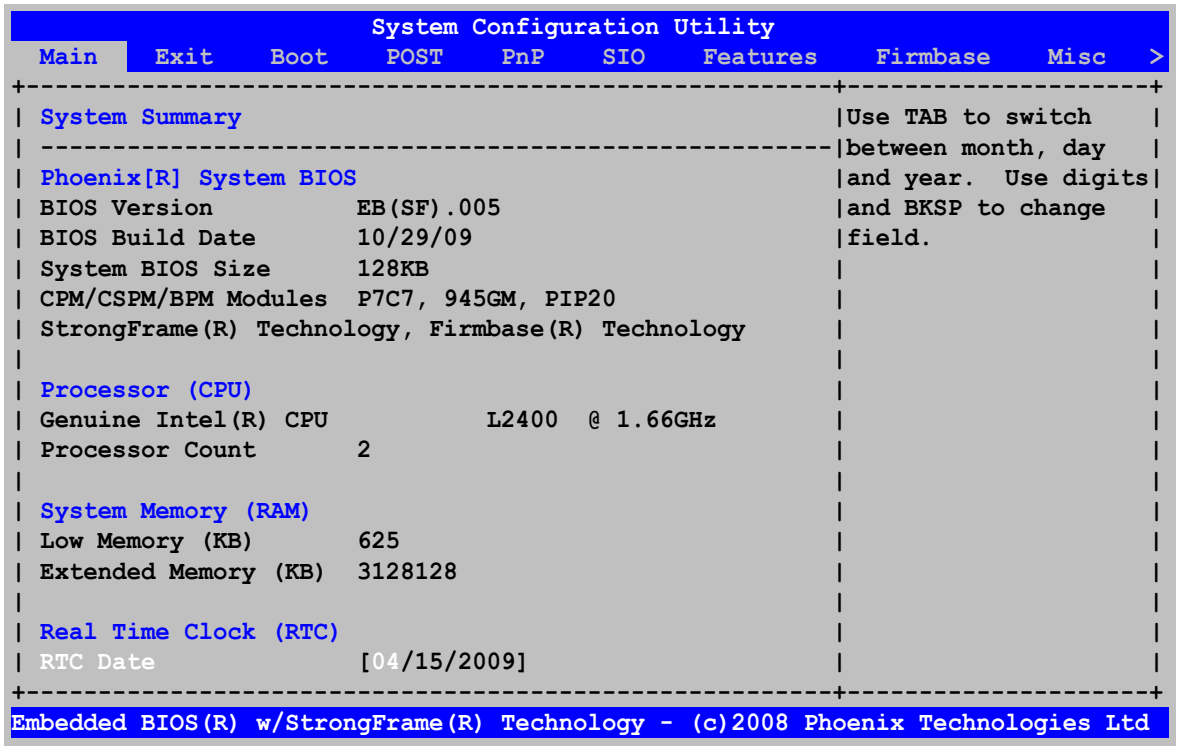
System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
System Summary
Phoenix[R] System BIOS
BIOS Version EB(SF).005
BIOS Build Date 10/29/09
System BIOS Size 128KB
CPM/CSPM/BPM Modules P7C7, 945GM, PIP20
StrongFrame(R) Technology, Firmbase(R) Technology
Processor (CPU)
Genuine Intel(R) CPU L2400 @ 1.66GHz
Processor Count 2
System Memory (RAM)
Low Memory (KB) 625
Extended Memory (KB) 3128128
Real Time Clock (RTC)
RTC Date [04/15/2009]
Use TAB to switch between month, day and year. Use digits and BKSP to change field.
Embedded BIOS(R) w/StrongFrame(R) Technology - (c)2008 Phoenix Technologies Ltd

TABLE OF CONTENTS

1 INTRODUCTION 6
1.1 BIOS FEATURES 6
1.2 ABOUT THIS MANUAL 6
1.3 MANUAL REVISIONS 7
1.3.1 RELATED PRODUCTS 7
1.3.2 REVISION HISTORY 7
1.4 RELATED DOCUMENTATION 7

2 HARDWARE CONFIGURATION 8
2.1 INTERRUPTS (IRQs) 8
2.2 MEMORY 9
2.3 I/O 11
2.4 EXAMPLE CONFIGURATION 12
2.5 GRAPHICS CONFIGURATION 13
2.5.1 INTEGRATED GRAPHICS CONTROLLER 13
2.5.2 FLAT PANEL DISPLAY (LVDS) INTERFACE 13
2.5.2.1 18 BIT COLOR DEPTH 13
2.5.2.2 24 BIT COLOR DEPTH (OPTIONAL) 14
2.5.2.3 BACKLIGHT INVERTER TYPES 14
2.5.2.4 BIOS CONFIGURATION 15
2.5.2.4.1 PANEL BACKLIGHT 15
2.5.2.4.2 PANEL BRIGHTNESS 15
2.5.2.4.3 PANEL FITTING 15

3 BIOS 16
3.1 BIOS UPDATE 16
3.2 BOOT SCREEN 17
3.2.1 POST SCREEN 17
3.2.2 PCI DEVICES 18
3.2.3 POST INTERVENTION 18
3.3 SETUP SCREEN STRUCTURE 19
3.3.1 INTRODUCTION 19
3.3.2 MENUS 19
3.3.3 NAVIGATION 20
3.4 BOOT ACTION MENU 21
3.5 MAIN SETUP MENU 22
3.5.1 SYSTEM SUMMARY 22
3.5.2 REAL TIME CLOCK (RTC) 22
3.5.3 MPL INFORMATION 23
3.5.3.1 MPL BOARD INFORMATION 23
3.5.3.2 MPL BIOS INFORMATION 23
3.6 EXIT SETUP MENU 24
3.6.1 SAVE, RESTORE AND EXIT SETUP 24
3.6.1.1 SAVE SETTINGS AND RESTART 24
3.6.1.2 EXIT SETUP WITHOUT SAVING CHANGES 25
3.6.1.3 RELOAD FACTORY-DEFAULTS AND RESTART 25
3.6.2 SAVE, RESTORE AND EXIT SETUP – USE PERMANENT STORAGE 26
3.6.2.1 SAVE SETTINGS, STORE TO FLASH AND RESTART 26
3.6.2.2 LOAD SETTINGS FROM FLASH AND RESTART 26
3.6.2.3 CLEAR SETTINGS IN FLASH 27
3.7 BOOT SETUP MENU 28
3.7.1 SYSTEM BOOT CONFIGURATION 28

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3.7.1.1 BOOT DEVICE PRIORITIZATION (BBS)....28
3.7.1.2 INITIALIZATION POLICY....29
3.7.1.3 IDE DRIVE CONFIGURATION....30
3.7.2 ICH ATA CONTROLLER CONFIGURATION....31
3.7.2.1 SATA CONTROLLER....31
3.7.2.1.1 RAID....32
3.7.2.1.2 COMBINED MODE....33
3.7.2.2 PATA CONTROLLER....33
3.8 POST SETUP MENU....34
3.8.1 POST MEMORY TESTS....34
3.8.1.1 LOW MEMORY STANDARD TEST....34
3.8.1.2 LOW MEMORY EXHAUSTIVE TEST....34
3.8.1.3 HIGH MEMORY STANDARD TEST....34
3.8.1.4 HIGH MEMORY EXHAUSTIVE TEST....34
3.8.1.5 CLICK DURING MEMORY TEST....35
3.8.1.6 CLEAR MEMORY DURING TEST....35
3.8.2 POST ERROR CONTROL....35
3.8.2.1 PAUSE ON POST ERRORS....35
3.8.3 POST USER INTERFACE....35
3.8.3.1 POST DISPLAY MESSAGES....35
3.8.3.2 POST OPERATOR PROMPT....35
3.8.3.3 DISPLAY PCI DEVICES....36
3.8.3.4 DISPLAY PNP DEVICES....36
3.8.4 POST DEBUGGING....36
3.8.5 DEVICE INITIALIZATION....36
3.8.5.1 POST FLOPPY SEEK....36
3.8.5.2 POST HARD DISK SEEK....36
3.9 PNP SETUP MENU....37
3.9.1 PLUG-N-PLAY (PNP) CONFIGURATION....37
3.9.1.1 PLUG-N-PLAY....37
3.9.1.2 PLUG-N-PLAY OS....37
3.9.2 IRQS RESERVED FOR PLUG-N-PLAY....38
3.9.3 DMA CHANNELS RESERVED FOR PLUG-N-PLAY....39
3.10 SIO SETUP MENU....40
3.10.1 SERIAL PORT 1 SETTINGS....40
3.10.2 SERIAL PORT 3 SETTINGS....41
3.10.3 SERIAL PORT 2 SETTINGS....41
3.10.4 SERIAL PORT 4 SETTINGS....42
3.10.5 PARALLEL PORT SETTINGS....43
3.11 FEATURES SETUP MENU....44
3.11.1 BIOS FEATURE CONFIGURATION....44
3.11.1.1 INTERRUPT PROCESSING....44
3.11.1.2 MP TABLES (NON-ACPI OSES)....44
3.11.1.3 ACPI....44
3.11.1.4 POST MEMORY MANAGER....45
3.11.1.5 SYSTEM MANAGEMENT BIOS....45
3.11.1.6 SPLASH SCREEN....45
3.11.2 CONSOLE REDIRECTION....45
3.11.2.1 USE CONSOLE ASSIGNMENTS BELOW....45
3.11.2.2 POST CONSOLE....46
3.11.2.3 PREBOOT CONSOLE....46
3.11.2.4 DEBUGGER CONSOLE....46
3.11.3 CPU CONFIGURATION....47
3.11.3.1 P7 GEYSERVILLE/SPEEDSTEP....47
3.11.3.2 INTEL VT....47
3.11.3.3 MICROCODE UPDATE....47
3.11.3.4 CORE MULTI-PROCESSING....47

3.12 FIRMBASE SETUP MENU....48
3.12.1 FEATURES ENABLED BY FIRMBASE[R] TECHNOLOGY....48
3.12.1.1 LEGACY USB....48
3.12.1.2 USB BOOT....48
3.12.1.3 EHCI/USB 2.0....49
3.12.2 BASIC FIRMBASE[R] TECHNOLOGY CONFIGURATION....49
3.12.2.1 FIRMBASE TECHNOLOGY....49
3.12.2.2 FIRMBASE DEBUG LOG....49
3.12.2.3 FIRMBASE SYSTEM CONSOLE....49
3.12.2.4 FIRMBASE SHELL ON SERIAL PORT....49
3.13 MISC SETUP MENU....50
3.13.1 CACHE CONTROL....50
3.13.1.1 SYSTEM CACHE....50
3.13.2 KEYBOARD CONTROL....50
3.13.2.1 KEYBOARD NUMLOCK LED....50
3.13.2.2 TYPEMATIC RATE....51
3.13.2.3 TYPEMATIC DELAY....51
3.13.3 MISCELLANEOUS BIOS CONFIGURATION....51
3.13.3.1 LOWERCASE HEX DISPLAYS....51
3.14 SPECIAL SETUP MENU....52
3.14.1 AC97 AUDIO CONFIGURATION....52
3.14.1.1 AC97 AUDIO SUPPORT....52
3.14.2 PC/104 MEMORY CONFIGURATION....52
3.14.2.1 PC/104 MEM BASE ADDRESS....52
3.14.2.2 PC/104 MEM LENGTH....53
3.14.3 PS/2 CONNECTOR CONFIGURATION....53
3.14.3.1 PS/2 CONNECTOR MODE....53
3.15 VIDEO SETUP MENU....54
3.15.1 LVDS PANEL SETTINGS....54
3.15.1.1 PANEL BACKLIGHT....54
3.15.1.2 PANEL BRIGHTNESS (PERCENT)....54
3.15.1.3 PANEL FITTING....55
3.15.2 GMCH SETTINGS....55
3.15.2.1 INITIALIZE IGD ON S3 RESUME....55
3.15.2.2 IGD FUNCTION 1....55
3.15.2.3 VIDEO FRAME BUFFER SIZE....55
3.16 ADVANCED INFO SETUP MENU....56
3.16.1 CPU INFORMATION....56
3.16.1.1 CPU MODEL AND STEPPING....56
3.16.1.2 CPU MICROCODE VERSION....56
3.16.1.3 ON-DIE THERMAL SENSOR, °C....56
3.16.2 ETHERNET INFORMATION....56
3.16.2.1 LAN 1 MAC ADDRESS....56
3.16.2.2 LAN 2 MAC ADDRESS....56

4 NETWORK BOOT (PXE)....57
4.1 PXE SETUP MENU....57
4.1.1 CONFIGURATION OPTIONS....58
4.1.2 KEY ASSIGNMENTS....58
4.2 BOOTING FROM NETWORK....58

5 COPYRIGHT....60

6 DISCLAIMER....60

7 TRADEMARKS....60

8 SUPPORT..... 60

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1 INTRODUCTION

1.1 BIOS FEATURES

The PIP20 / PIP22 BIOS V2.xy supports the following standards and key features:

- ACPI 1.0
- Plug'n'Play
- USB Boot (Floppy disk, CD-ROM, Hard disk)
- USB Legacy Keyboard and Mouse
- PXE Network Boot

1.2 ABOUT THIS MANUAL

This manual provides all the information necessary to configure the PIP20/PIP22 BIOS. The manual is written for technical personnel. It is recommended to use this manual in combination with the PIP20/PIP22 User Manual.

NOTE
It is strongly recommended to read the PIP20/PIP22 User Manual, the PIP20/PIP22 Technical Reference Manual and also this manual before the PIP20/PIP22 is switched on.

1.3 MANUAL REVISIONS

1.3.1 RELATED PRODUCTS

Manual Revision	Related To
A	PIP20/PIP22 BIOS V1.30
B	PIP20/PIP22 BIOS V1.35
C	PIP20/PIP22 BIOS V2.00

1.3.2 REVISION HISTORY

Manual Revision	Date	Description
A	2008-02-21	Initial release of this document.
B	2008-06-16	Updated to reflect BIOS V1.35 features
C	2009-10-29	Updated to reflect BIOS V2.00 features

1.4 RELATED DOCUMENTATION

The following documents are related to this manual. For detailed Information about a specific PIP feature or setting please refer to these additional manuals.

Reference	Description	Available from
[1]	PIP20/PIP22 User Manual	MPL AG: http://www.mpl.ch/6000.html
[2]	PIP20/PIP22 Technical Reference Manual	MPL AG: http://www.mpl.ch/6000.html

2 HARDWARE CONFIGURATION

2.1 INTERRUPTS (IRQs)

The standard PC AT architecture is limited to 16 Interrupts (IRQs). The following table shows the typical usage of the available interrupt lines on the PIP.

Please consult this table before changing IRQ assignments of devices in the BIOS or adding PC/104 expansion cards in order to avoid conflicts and to make sure that there will be sufficient IRQs available.

The PIP standard configuration uses all but two interrupts (5 and 11). IRQ 12 is also available if the following two conditions are met:

- 'PS/2 CONNECTOR MODE' (refer to section 3.14.3.1) is set to 'Mouse Disabled' or set to 'Auto (Y-cable) ' **and** no PS/2 mouse is connected
- 'LEGACY USB' (refer to section 3.12.1.1) is disabled

Additional interrupts can be made available by disabling onboard devices. Onboard devices that can be configured to use different interrupts are marked 'Configurable' in the table below.

IRQ	Usage	Remarks	PIP default configuration
0	System Timer	Not available	
1	Keyboard	Not available	
2	Cascade	Not available	
3	Serial Port 2 / Serial Port 4	Configurable / Available for PC/104	Used
4	Serial Port 1 / Serial Port 3	Configurable / Available for PC/104	Used
5	Not used	Configurable / Available for PC/104	Available
6	Floppy Disk Controller	Available for PC/104	Used
7	Parallel Port	Configurable / Available for PC/104	Used
8	Real Time Clock (RTC)	Not available	
9	PCI Devices	Not available	
10	PCI Devices	Not available	
11	PCI Devices	Not available	
12	PS/2 Mouse	Available for PC/104 if PS/2 mouse disabled and Usb Legacy disabled	
13	Floating Point Unit (FPU)	Not available	
14	Primary ATA Channel	Not available	
15	Secondary ATA Channel	Not available	

For a PC/104 card configuration example, please refer to section 2.4.

2.2 MEMORY

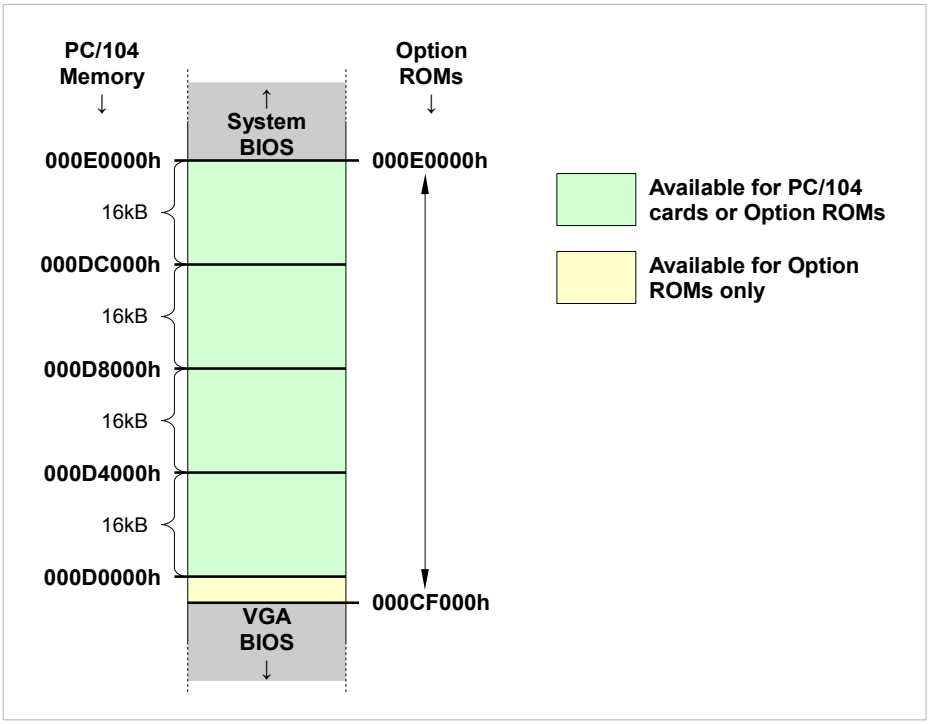
PC/104 (ISA) and PC/104-*Plus* (PCI) add-on cards may require a certain amount of memory for installing their Option ROMs or they have onboard memory that needs to be mapped into the system memory space.
The memory area used for this purpose is limited to 000CF000h – 000DFFFFh.

The area 000C0000h – 000CF000h is used by the VGA BIOS and is therefore not available for other devices. The system BIOS is located at 000E0000h – 000FFFFFh (128kB).

This leaves the memory range 000CF000h – 000E0000h (68kB) to be used as memory for Option ROMs and/or, from address 000D0000h on, for PC/104 cards. The onboard Option ROMs (PXE Network Boot, RAID) use this area of memory as well, if they are enabled.

The PC/104 Memory can be enabled in blocks of 16kB (4000h) size, starting at addresses 000D0000h (= segment D000), 000D4000h (= segment D400), 000D8000h (= segment D800) or 000DC000 (= segment DC00). Please refer to section 3.14.2 for the detailed options.

The following is an illustration of the PIP's memory map:



The onboard Option ROMs, if enabled, require a certain amount of memory during their initialization and another for their execution. As with almost all Option ROMs, the amount of memory required for their execution is much smaller than during the initialization.

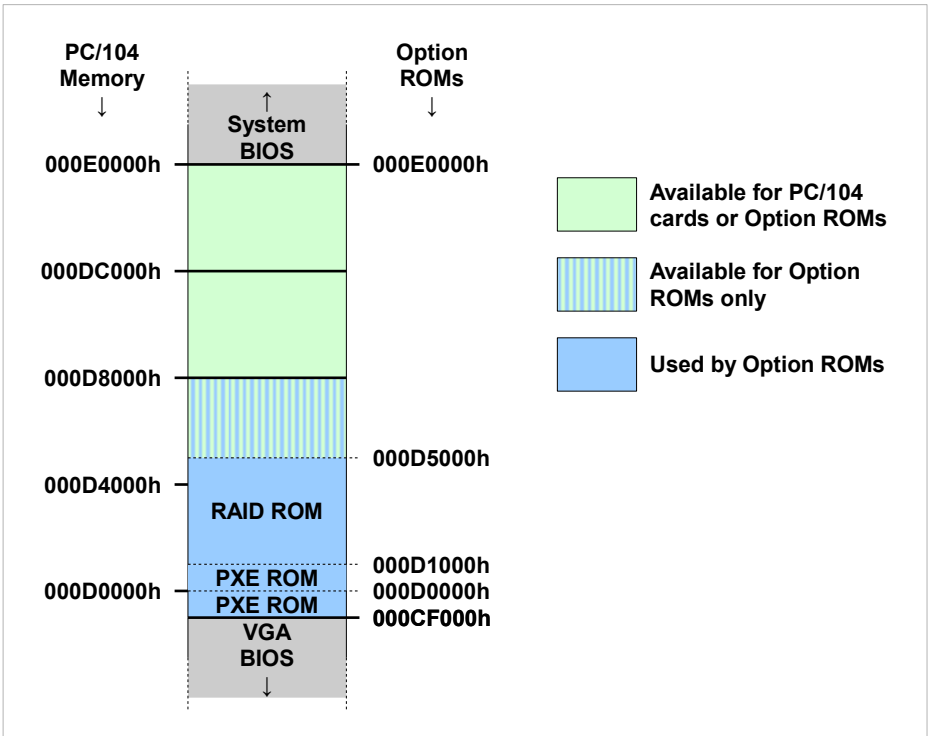
The following table shows the memory requirements for the onboard Option ROMs.

	Memory needed for initialization	Memory needed for execution
PXE ROM	59kB (EC00h)	4kB (1000h)
RAID ROM	55kB (DC00h)	16kB (4000h)

Please note that even if the system had enough free memory for the execution of an Option ROM, it is the amount of memory required during the initialization that defines whether or not a Option ROM can be executed.

The figure below shows the resulting memory map if the Option ROMs are initialized in the following order:

1. PXE ROM for Ethernet 1
2. PXE ROM for Ethernet 2
3. RAID ROM



This is what happens at initialization:

- The PXE ROM for Ethernet 1 gets initialized. It temporarily occupies the memory from 000CF000h to 000DDC00h (59kB).
  After initialization, it uses the memory range 000CF000h – 000D0000h (1kB).
- The PXE ROM for Ethernet 2 gets initialized. It temporarily occupies the memory from 000D000h to 000DEC00h (59kB).
  After initialization, it uses the memory range 000D0000h – 000D1000h (1kB).
- The RAID ROM gets initialized. It temporarily occupies the memory from 000D1000h to 000DEC00h (55kB).
  After initialization, it uses the memory range 000D1000h – 000D5000h (16kB).

NOTE: If the RAID ROM would have been initialized first, it ended up using the memory range 000CF000h – 000D3000h. This would have left only 52kB of memory free, so the PXE ROM would not have been able to initialize anymore as it requires 59kB of memory for initialization.

2.3 I/O

Input/Output space is required by most PC/104 cards. The table below is an overview of the PIP's I/O space usage from 0000h to 03FFh, which is the important range for PC/104 cards.

'Configurable' devices can be set up to use a different I/O range, or can be disabled completely.

I/O range	Usage	Remarks	PIP20/PIP22 default configuration
03F8h – 03FFh	Serial port	Configurable	Used
03F7h – 03F7h	Floppy disk controller	Configurable	Used
03F6h – 03F6h	Primary ATA channel	Not available	
03F0h – 03F5h	Floppy disk controller	Configurable	Used
03E8h – 03EFh	Serial port	Configurable	Used
03C0h – 03DFh	VGA	Not available	
03B0h – 03BBh	VGA	Not available	
0378h – 037Fh	Parallel port	Configurable	Used
0376h – 0376h	Secondary ATA channel	Not available	
0338h – 033Fh	Serial port	Configurable	Available
02F8h – 02FFh	Serial port	Configurable	Used
02E8h – 02EFh	Serial port	Configurable	Used
0278h – 027Fh	Parallel port	Configurable	Available
0238h – 023Fh	Serial port	Configurable	Available
0228h – 022Fh	Serial port	Configurable	Available
0220h – 0227h	Serial port	Configurable	Available
01F0h – 01F7h	Primary ATA channel	Not available	
0170h – 0177h	Secondary ATA channel	Not available	
0000h – 00FFh	Various system devices	Not available	

This leads to the following consecutive I/O ranges that can be used by PC/104 cards on a PIP with default configuration:

- 100h – 16Fh
- 180h – 1EFh
- 200h – 2DFh
- 300h – 370h
- 380h – 3AFh

For a PC/104 card configuration example, please refer to section 2.4.

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2.4 EXAMPLE CONFIGURATION

The following is an example of how to configure a PC/104 add-on card. These cards commonly require manual configuration and can cause problems if they are not configured properly.

NOTE: PC/104 cards are ISA based, while PC/104-*Plus* cards are PCI based. PC/104-*Plus* cards generally do not require manual configuration.

In this example, a Softing CAN-AC2-104 CAN card (PC/104) is used.

Step 1 – Resources required by PC/104 card

- Check the resource requirements of the add-on card. Refer to the card's User Manual for the requirements. The CAN-AC2-104 board has the following requirements:
  - I/O range: 4 Byte area between 0000h and 03FFh
  - Memory range: 16kByte area between C8000h and F7FFFh
  - IRQ channel: One IRQ

Step 2 – Define card configuration

- Choose a resource configuration that is not conflicting with other system devices or installed cards. After checking with the available resources of the PIP, we chose the following values:
  - I/O range: 240h (check section 2.3 for available I/O ranges)
  - Memory range: DC000h (check section 2.2 for available memory ranges)
  - IRQ channel: 5 (check section 2.1 for available IRQs)

NOTE: Only the memory range needs to be configured in the BIOS setup! I/O range and interrupt channel do not need to be configured in the BIOS.

- Configure the selected I/O range on the card by setting the DIP switch accordingly. The memory and IRQ configurations for this card are done by software. However, other types of cards may have jumpers or DIP switches for memory and / or IRQ configuration. If so, these must be configured correctly.

Step 3 – Configure BIOS

- **I/O**
  We chose an I/O range that is not used by any other device, therefore no configuration is needed.
- **Memory**
  This card does not have an Option ROM, therefore Shadow memory must be disabled for the configured memory range.
  - Set up 'PC104 Mem Base Addr' and 'PC104 Mem Size' according to the chosen configuration. See section 3.14.2 for further information.
    - PC/104 MEM Base Addr: DC000h
    - PC/104 MEM Length: 16k
- **IRQ**
  We chose an IRQ that is not used by any other device, therefore no configuration is needed.

Step 4 – Use the card

- The PIP BIOS is now properly configured for the use of the CAN-AC2-104 card. After the installation of all necessary software and/or drivers, the card is operational.

2.5 GRAPHICS CONFIGURATION

2.5.1 INTEGRATED GRAPHICS CONTROLLER

The integrated graphics controller can be disabled with DIP switch 2 (please refer to the PIP20/PIP22 Technical Reference Manual for further information).

SW2-1	Internal Graphics Controller
OFF	Internal Graphics Controller Enabled
ON	Internal Graphics Controller Disabled

2.5.2 FLAT PANEL DISPLAY (LVDS) INTERFACE

NOTE

All configuration options in this section are used for the LVDS port only. If the monitor is connected to the DVI-I port of the PIP and the internal LVDS port is not used, these options should not be modified.
If a valid panel type is selected, the DVI-I port of the PIP will be disabled and cannot be used in environments that do not have an Intel Graphics driver (e.g. POST, DOS).

2.5.2.1 18 BIT COLOR DEPTH

The PIP features an internal onboard LVDS connector for a 18bit Flat Panel display.

More information about the LVDS connector can be found in the PIP20/PIP22 Technical Reference Manual.

The flat panel timing is set with DIP switch 2 (please refer to the PIP20/PIP22 Technical Reference Manual for further information).

This BIOS version supports the following flat panel timings:

SW2-5	SW2-6	SW2-7	SW2-8	Panel type	Resolution	Remarks
ON	ON	ON	ON	Panel 1	640 x 480	Single channel
OFF	ON	ON	ON	Panel 2	(reserved)	Not used – LVDS port disabled
ON	OFF	ON	ON	Panel 3	(reserved)	Not used – LVDS port disabled
OFF	OFF	ON	ON	Panel 4	(reserved)	Not used – LVDS port disabled
ON	ON	OFF	ON	Panel 5	(reserved)	Not used – LVDS port disabled
OFF	ON	OFF	ON	Panel 6	(reserved)	Not used – LVDS port disabled
ON	OFF	OFF	ON	Panel 7	(reserved)	Not used – LVDS port disabled
OFF	OFF	OFF	ON	Panel 8	(reserved)	Not used – LVDS port disabled
ON	ON	ON	OFF	Panel 9	(reserved)	Not used – LVDS port disabled
OFF	ON	ON	OFF	Panel 10	(reserved)	Not used – LVDS port disabled
ON	OFF	ON	OFF	Panel 11	(reserved)	Not used – LVDS port disabled
OFF	OFF	ON	OFF	Panel 12	(reserved)	Not used – LVDS port disabled
ON	ON	OFF	OFF	Panel 13	(reserved)	Not used – LVDS port disabled
OFF	ON	OFF	OFF	Panel 14	(reserved)	Not used – LVDS port disabled
ON	OFF	OFF	OFF	Panel 15	(reserved)	Not used – LVDS port disabled
OFF	OFF	OFF	OFF	Panel 16	(reserved)	Not used – LVDS port disabled (default)

2.5.2.2 24 BIT COLOR DEPTH (OPTIONAL)

As an option, the PIP can be equipped with an internal LVDS connector for a 24bit flat panel display. The add-on module that provides this interface is called DOLL.

This module excludes the use of the onboard 18bit LVDS connector.

For more information, please refer to the DOLL User Manual.

The flat panel timing is set with DIP switch 2 (please refer to the PIP20/PIP22 Technical Reference Manual for further information).

If the PIP is equipped with a DOLL, the following flat panel timings can be used:

SW2-5	SW2-6	SW2-7	SW2-8	Panel type	Resolution	Remarks
ON	ON	ON	ON	Panel 1	1024 x 768	Dual channel
OFF	ON	ON	ON	Panel 2	1280 x 1024	Dual channel
ON	OFF	ON	ON	Panel 3	1920 x 1080	Dual channel
OFF	OFF	ON	ON	Panel 4	1600 x 1200	Dual channel, Reduced Blanking
ON	ON	OFF	ON	Panel 5	(reserved)	Undefined – Do not use
OFF	ON	OFF	ON	Panel 6	(reserved)	Undefined – Do not use
ON	OFF	OFF	ON	Panel 7	(reserved)	Undefined – Do not use
OFF	OFF	OFF	ON	Panel 8	(reserved)	Undefined – Do not use
ON	ON	ON	OFF	Panel 9	(reserved)	Undefined – Do not use
OFF	ON	ON	OFF	Panel 10	(reserved)	Undefined – Do not use
ON	OFF	ON	OFF	Panel 11	(reserved)	Undefined – Do not use
OFF	OFF	ON	OFF	Panel 12	(reserved)	Undefined – Do not use
ON	ON	OFF	OFF	Panel 13	(reserved)	Undefined – Do not use
OFF	ON	OFF	OFF	Panel 14	(reserved)	Undefined – Do not use
ON	OFF	OFF	OFF	Panel 15	(reserved)	Undefined – Do not use
OFF	OFF	OFF	OFF	Panel 16	(reserved)	Undefined – Do not use

NOTE

If DOLL is present in the system, its LVDS output is always enabled.
Make sure that the correct flat panel timing is selected.

2.5.2.3 BACKLIGHT INVERTER TYPES

The type of backlight inverter used for the flat panel is set with DIP switch 2 (please refer to the PIP20/PIP22 Technical Reference Manual for further information).

This BIOS version supports the following inverter types:

SW2-2	SW2-3	SW2-4	Inverter type	Voltage range	Min. brightness	Max. brightness
OFF	OFF	OFF	Type 1	0 Volt – 5 Volt	0 Volt	5 Volt
ON	OFF	OFF	Type 2	5 Volt – 0 Volt	5 Volt	0 Volt
OFF	ON	OFF	Type 3	1.8 Volt – 0 Volt	1.8 Volt	0 Volt
ON	ON	OFF	Type 4	0 Volt – 2 Volt	0 Volt	2 Volt
OFF	OFF	ON	Type 5	0 Volt – 3 Volt	0 Volt	3 Volt
ON	OFF	ON	Type 6	1.5 Volt – 2.3 Volt	1.5 Volt	2.3 Volt
OFF	ON	ON	Type 7	(reserved)	not defined	not defined
ON	ON	ON	Type 8	(reserved)	not defined	not defined

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2.5.2.4 BIOS CONFIGURATION

The LVDS-related BIOS settings are located in the Video Setup Menu (refer to section 3.15.1).

NOTE: These options are only used if a LVDS panel is connected and properly configured via DIP switches. If the monitor is connected to the DVI-I port of the PIP, these options are inactive and do not affect the display output.

2.5.2.4.1 PANEL BACKLIGHT

This option selects whether the LVDS panel backlight brightness is controlled by BIOS setting or by other means (Hardware up/down switches or application software control).

When set to 'HW/App Control', the backlight can be dimmed by connecting UP and DOWN switches / buttons to Panel Dimming connector J27 (please refer to the Technical Reference Manual for further information).

Panel Backlight		
	HW/App Control	Brightness is controlled by hardware or application.
default	BIOS Control	Brightness is controlled by BIOS setup.

2.5.2.4.2 PANEL BRIGHTNESS

This option controls the brightness level of the panel backlight, if 'Panel Backlight" is set to "BIOS Control'. The brightness can be adjusted in 5% increments.

NOTE: Modifying this option changes the backlight brightness instantly. However, it is still required to write the settings to CMOS when leaving the BIOS setup. Otherwise, the previous brightness setting will be used after leaving the setup.

Panel Brightness (percent)		
	Minimum	Minimal brightness level.
	5	5% brightness level.
	10	10% brightness level.
	...	...
	...	[5% increments]
	...	...
	95	95% brightness level.
default	100	100% brightness level.

2.5.2.4.3 PANEL FITTING

This option controls the fitting of the panel contents.

If the native resolution of a panel does not correspond to the software resolution, the contents is either stretched to fit the native screen resolution or centered, which results in a black frame around the actual screen content.

Panel Fitting is only used in environments without Intel Graphics driver installed (e.g. POST screen, DOS). If an operating system with Intel Graphics driver is started, this setting can be overridden by the driver.

Panel Backlight		
default	Default	Brightness is controlled by hardware or application.
	Center All Modes	Both Graphics and Text modes are centered.
	Stretch All Modes	Always fit the screen size.
	Stretch Text Modes	Text modes are stretched to fit the screen.
	Stretch Graphics Modes	Graphics Modes are stretched to fit the screen.

3 BIOS

3.1 BIOS UPDATE

The system BIOS of the PIP resides in a FLASH memory. Therefore BIOS upgrading with an additional utility is easily possible.

For BIOS upgrading, download the Windows executable program file from the MPL AG homepage www.mpl.ch. This file creates a bootable floppy disk including all the files necessary to update the BIOS.

1. Download BIOS upgrade file suitable for your PIP20/PIP22.
   IMPORTANT: Check the BIOS identification number (MEV-xxxxx-yyy, see section 3.5.3.2).
2. Execute the BIOS upgrade file to create the bootable BIOS upgrade disk.
3. Boot your PIP with the BIOS upgrade disk.
4. Follow the instructions on the screen. You can choose to save the current BIOS version to the disk as a backup in case you want to revert the update.
5. BIOS upgrade starts and informs you of the progress.
6. Power down the system after the BIOS update.

The new BIOS takes control the next time you start up your PIP.

CAUTION

If something fails (e.g., loss of power) during BIOS upgrading (especially after erasing the FLASH memory) and the utility can not terminate properly, the PIP will no longer have a valid BIOS!
In this case, contact MPL AG to start up the system again.

The following ways are possible to upgrade the BIOS:

1. External USB floppy drive
The BIOS Upgrade Disk can be booted with an USB floppy drive.

2. CD ROM drive (external USB drive or internal ATA drive)
If your system has a CD ROM drive, the BIOS Upgrade Disk can be used as boot image to create a bootable CD ROM.

3. Hard Disk drive (external USB drive or internal ATA drive)
If your system hard disk contains a DOS partition, you can start the BIOS upgrade from there.
If your system hard disk does not contain a DOS partition, you can temporarily install a different hard drive that boots a DOS. This hard drive can either be connected to one of the P-ATA / S-ATA ports or externally to the USB port. A bootable USB memory stick is possibly the most convenient method.

4. Network (PXE) boot
It is possible to boot the BIOS Upgrade Disk via network. The boot server in the network must be configured to provide an image created from the BIOS Upgrade Disk as boot file.

3.2 BOOT SCREEN

At POST (**P**ower **O**n **S**elf **T**est), various status information and information about the system configuration is displayed.

3.2.1 POST SCREEN

The POST Screen is the first visual output that the system produces at start up.

It contains information about BIOS version, CPU type, amount of memory (RAM), PCI devices and option ROM messages.

The following is the POST screen of a typical system:

```
Embedded BIOS(R) w/StrongFrame(R) Technology Version EB(SF).005
Copyright (c) 2008 Phoenix Technologies Ltd.  All rights reserved.
MPL PIP20 BIOS V2.00
Genuine Intel(R) CPU           L2400  @ 1.66GHz


DEL=preboot menu  ESC=skip memory tests

01032064KB Memory Passed
PCI Device Table.
Bu Dv Fn Dev/Vend Class             Irq| Bu Dv Fn Dev/Vend Class             Irq
00 00 00 27A08086 Host Bridge          | 00 02 00 27A28086 VGA Display       9
00 02 01 27A68086 Display              | 00 1C 00 27D08086 Bridge to Bus 01  9
00 1C 01 27D28086 Bridge to Bus 02  10 | 00 1D 00 27C88086 Serial Bus        11
00 1D 01 27C98086 Serial Bus        9  | 00 1D 02 27CA8086 Serial Bus        9
00 1D 03 27CB8086 Serial Bus        10 | 00 1D 07 27CC8086 Serial Bus        11
00 1E 00 24488086 Bridge to Bus 03     | 00 1E 02 27DE8086 Audio             9
00 1F 00 27BD8086 ISA Bridge           | 00 1F 01 27DF8086 IDE Controller    9
00 1F 02 27C68086 RAID Controller   10 | 00 1F 03 27DA8086 Serial Bus        10
01 00 00 109A8086 Ethernet          9  | 02 00 00 109A8086 Ethernet          10
03 00 00 8025104C Firewire          11 | 03 00 06 88881283 ISA Bridge

Initializing Intel(R) Boot Agent GE v1.3.35
PXE 2.1 Build 087 (WfM 2.0)
Press Ctrl+S to enter the Setup Menu...
```

3.2.2 PCI DEVICES

At POST, the PCI devices installed in the system are listed. The figure below shows the typical PCI devices present on the PIP board.

Depending on BIOS settings and installed options, the actual PCI table may differ slightly from the example below.

NOTE: All additional PC/104+ and/or PCI devices installed in the system will appear on bus 03 and above.

```
PCI Device Table.
Bu Dv Fn Dev/Vend Class             Irq| Bu Dv Fn Dev/Vend Class            Irq
00 00 00 27A08086 Host Bridge          | 00 02 00 27A28086 VGA Display       9
00 02 01 27A68086 Display              | 00 1C 00 27D08086 Bridge to Bus 01  9
00 1C 01 27D28086 Bridge to Bus 02  10 | 00 1D 00 27C88086 Serial Bus         11
00 1D 01 27C98086 Serial Bus        9  | 00 1D 02 27CA8086 Serial Bus         9
00 1D 03 27CB8086 Serial Bus        10 | 00 1D 07 27CC8086 Serial Bus         11
00 1E 00 24488086 Bridge to Bus 03     | 00 1E 02 27DE8086 Audio              9
00 1F 00 27BD8086 ISA Bridge           | 00 1F 01 27DF8086 IDE Controller     9
00 1F 02 27C68086 RAID Controller   10 | 00 1F 03 27DA8086 Serial Bus         10
01 00 00 109A8086 Ethernet          9  | 02 00 00 109A8086 Ethernet           10
03 00 00 8025104C Firewire          11 | 03 00 06 88881283 ISA Bridge
```

3.2.3 POST INTERVENTION

The following table is an overview of the keys that invoke functions at POST.

Key	Action
[**B**] or [**CTRL**] + [**B**]	Enter BBS Boot Action menu (see section 3.4 for details).
[**DEL**] or [**C**] or [**CTRL**] + [**C**]	Enter BIOS Setup.
[**D**] or [**CTRL**] + [**D**]	Skip disk drive detection.
[**ESC**]	Skip memory testing.

3.3 SETUP SCREEN STRUCTURE

3.3.1 INTRODUCTION

The BIOS setup screen is divided into several menus. Menus contain setup options and fields that fall into the same context. For example, the 'Boot' menu contains settings that deal with configuring the system's boot order.

On the top of the screen, all available menus are listed. Note the '<' and '>' symbols which can appear at either end of the menu line to indicate that the list of menus continues in that direction.

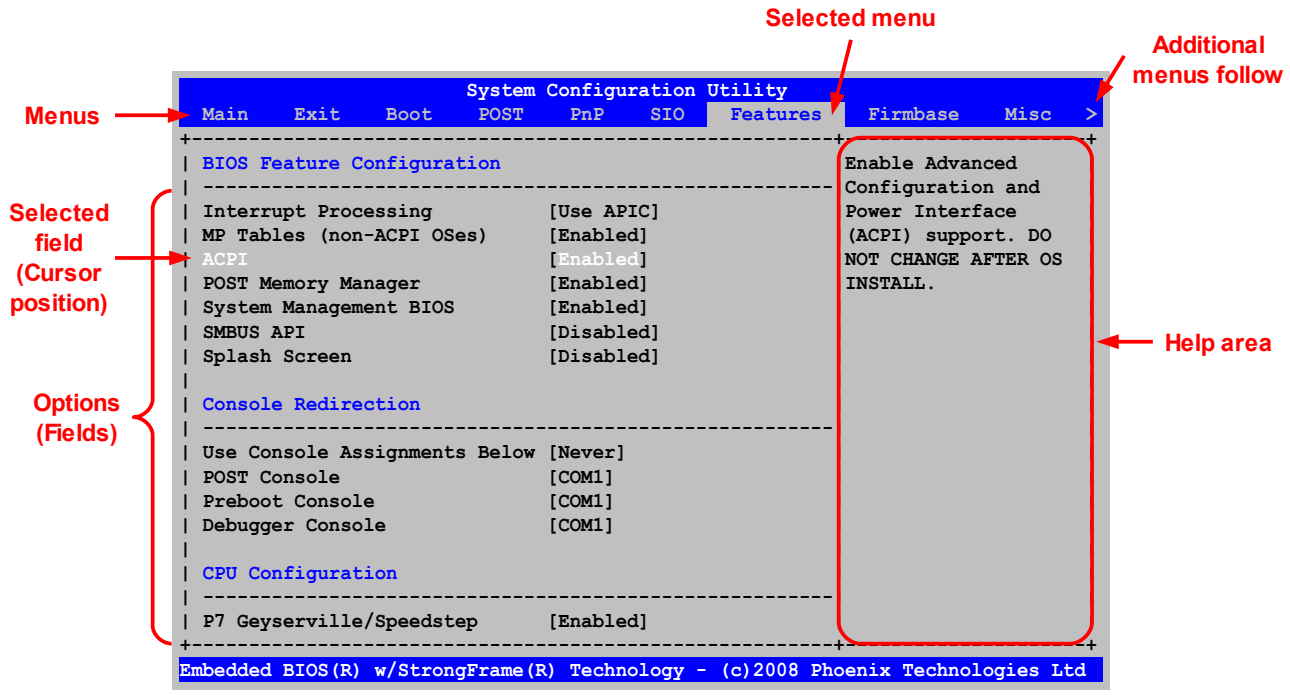
3.3.2 MENUS

Each menu is divided into different sections.
The left side of the screen contains configuration options/fields (the “BIOS settings”) and/or displays read-only information fields. Related items are grouped (see the screenshot below, for example the 'Console Redirection' items).

The currently selected field (the cursor position) is highlighted.

The right side of the screen contains a help area which provides instant help related to the selected option.

The following screenshot shows the main parts of a typical setup screen view (the 'Features' menu is selected):


Selected menu
Additional menus follow
Menus
Selected field (Cursor position)
Options (Fields)
Help area
System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
BIOS Feature Configuration
Interrupt Processing [Use APIC]
MP Tables (non-ACPI OSes) [Enabled]
ACPI [Enabled]
POST Memory Manager [Enabled]
System Management BIOS [Enabled]
SMBUS API [Disabled]
Splash Screen [Disabled]
Console Redirection
Use Console Assignments Below [Never]
POST Console [COM1]
Preboot Console [COM1]
Debugger Console [COM1]
CPU Configuration
P7 Geyserville/Speedstep [Enabled]
Enable Advanced Configuration and Power Interface (ACPI) support. DO NOT CHANGE AFTER OS INSTALL.
Embedded BIOS(R) w/StrongFrame(R) Technology - (c)2008 Phoenix Technologies Ltd

3.3.3 NAVIGATION

The following table is an overview of the keys used to navigate through the setup menu and modify the settings.

Key	Action
[**LEFT**]	Go to next menu.
[**RIGHT**]	Go to previous menu.
[**DOWN**]	Move cursor one line down, scrolling the window as necessary.
[**UP**]	Move cursor one line up, scrolling the window as necessary.
[**TAB**]	Move cursor down, to the next configurable field.
[**SHIFT**] + [**TAB**]	Move cursor up, to the previous configurable field.
[**HOME**]	Move cursor to first configurable field of the current menu, scrolling the window as necessary.
[**END**]	Move cursor to last configurable field of the current menu, scrolling the window as necessary.
[**ESC**]	Invoke 'Exit Setup Without Saving Changes' command. A confirmation dialog appears.
[**SPACE**]	Toggle an Enable/Disable field. Go to next value of a multiple choice field. Increase a numeric field's value.
[**+**]	Toggle an Enable / Disable field. Go to next value of a multiple choice field. Increase a numeric field's value.
[**–**]	Toggle an Enable/Disable field. Go to previous value of a multiple choice field. Decrease a numeric field's value.
[**BACKSPACE**]	Reset an Enable/Disable or multiple choice field. Back-up in numeric fields .
[**0**] – [**9**]	Used to enter numeric values, e.g. RTC time.

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3.4 BOOT ACTION MENU

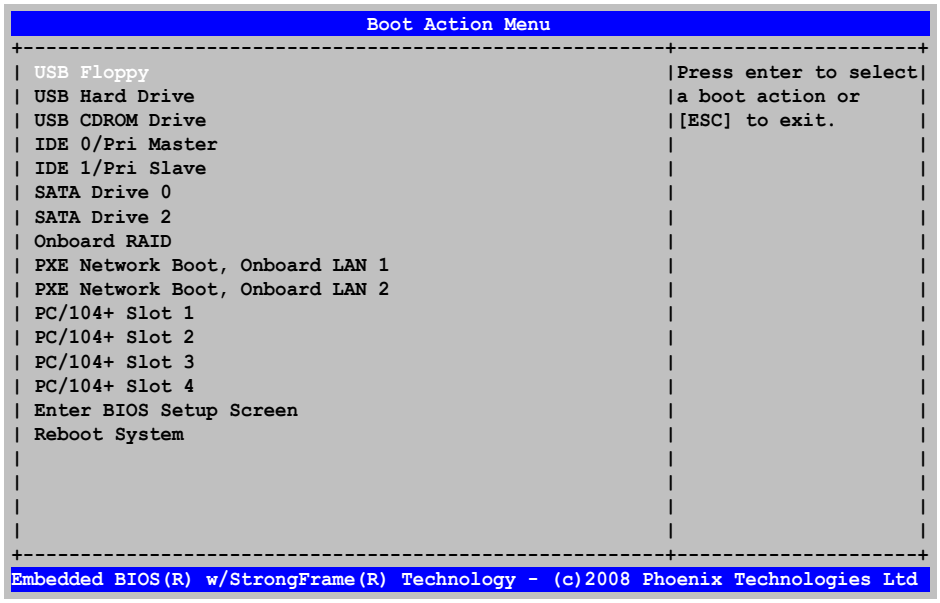
The Boot Action Menu can be invoked by pressing the 'B' key at POST. It also appears at the end of POST in the event that the BIOS does not find a bootable device.

The Boot Action Menu can be used to boot from a different device, without having to change the Boot Order in the BIOS setup.

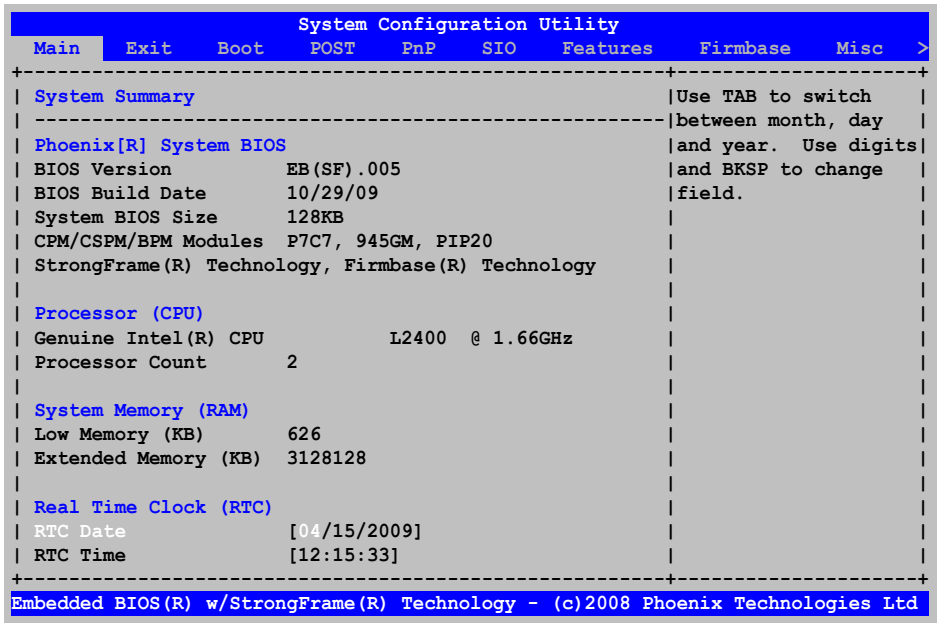
The boot device can be selected by using the UP and DOWN arrow keys. Pressing ENTER executes the boot command. If booting the device was not successful, the system returns to the Boot Action Menu.

The Boot Action Menu lists all possible boot sources. This does not mean that all sources are ready to be booted from. Some may not work without further initialization.

The following shows a typical Boot Action Menu:



3.5 MAIN SETUP MENU


System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
System Summary
Phoenix[R] System BIOS
BIOS Version EB(SF).005
BIOS Build Date 10/29/09
System BIOS Size 128KB
CPM/CSPM/BPM Modules P7C7, 945GM, PIP20
StrongFrame(R) Technology, Firmbase(R) Technology
Processor (CPU)
Genuine Intel(R) CPU L2400 @ 1.66GHz
Processor Count 2
System Memory (RAM)
Low Memory (KB) 626
Extended Memory (KB) 3128128
Real Time Clock (RTC)
RTC Date [04/15/2009]
RTC Time [12:15:33]
Use TAB to switch between month, day and year. Use digits and BKSP to change field.
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3.5.1 SYSTEM SUMMARY

This section contains detailed information about the system, such as BIOS details, processor information and system memory information.

3.5.2 REAL TIME CLOCK (RTC)

The system's time and date are set here.

NOTE: Unlike other BIOS settings, changes to the time and/or date are applied immediately. It is not necessary to save the BIOS settings if just the time and/or date have been changed.

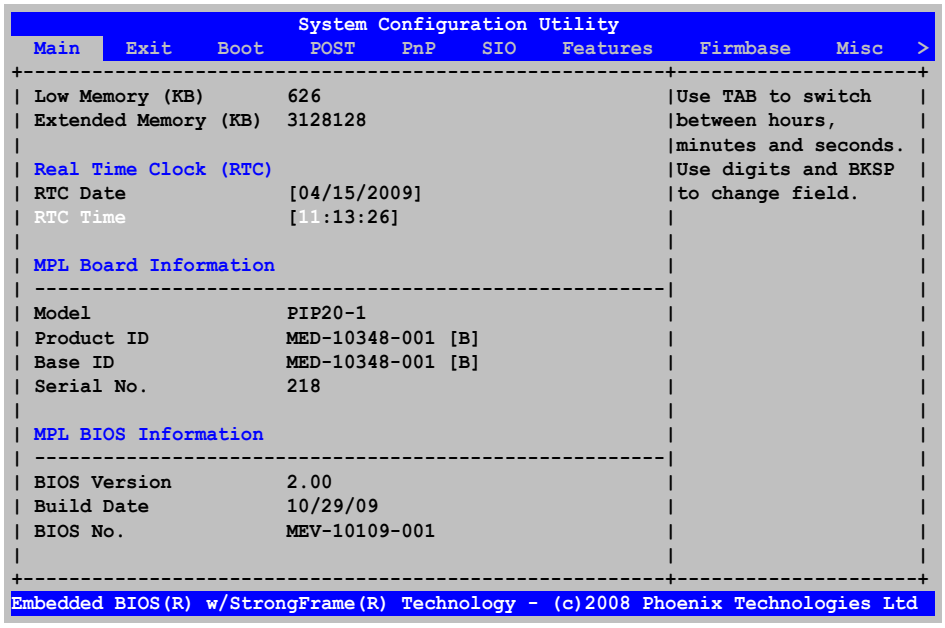
RTC Date notation is [mm/dd/yyyy] (mm = Month, dd = Day, yyyy = Year)
RTC Time notation is [hh:mm:ss] in 24h format (hh = Hours, mm = Minutes, ss = Seconds)

The default values are as follows:

RTC Date: equals BIOS Build Date
RTC Time: 00:00:00

3.5.3 MPL INFORMATION

Scrolling further down in the Main Setup Menu, detailed information about the PIP board and the BIOS version can be found. The information is divided into MPL Board Information and MPL BIOS Information:


System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
Low Memory (KB) 626
Extended Memory (KB) 3128128
Real Time Clock (RTC)
RTC Date [04/15/2009]
RTC Time [11:13:26]
MPL Board Information
Model PIP20-1
Product ID MED-10348-001 [B]
Base ID MED-10348-001 [B]
Serial No. 218
MPL BIOS Information
BIOS Version 2.00
Build Date 10/29/09
BIOS No. MEV-10109-001
Use TAB to switch between hours, minutes and seconds.
Use digits and BKSP to change field.
Embedded BIOS(R) w/StrongFrame(R) Technology - (c)2008 Phoenix Technologies Ltd

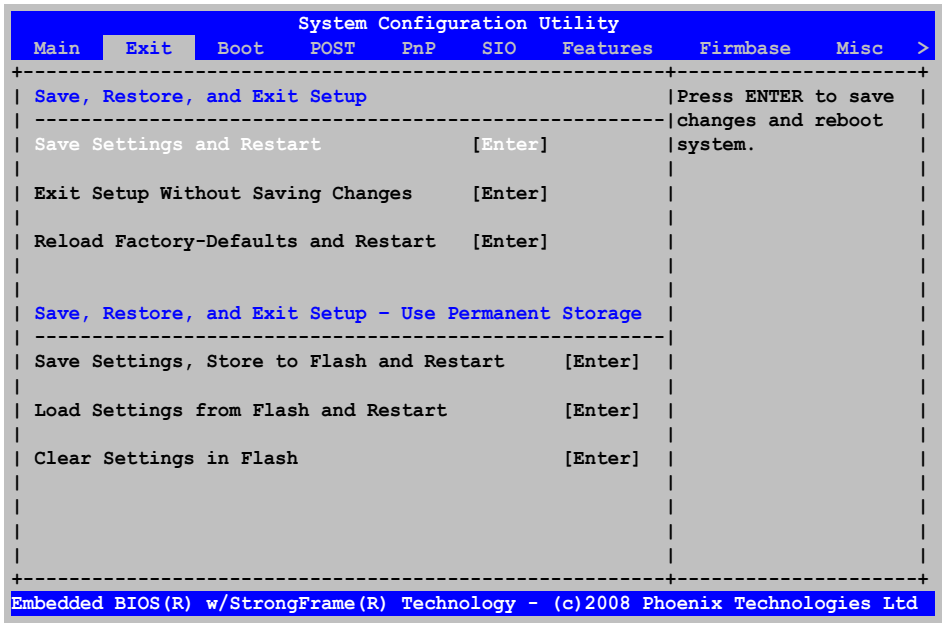
3.5.3.1 MPL BOARD INFORMATION

This section contains information about the PIP board, such as model name, product ID / base ID, and serial number.

3.5.3.2 MPL BIOS INFORMATION

This section contains detailed information about the BIOS of the PIP, such as BIOS version, build date, and BIOS number (MEV-xxxxx-yyy).

3.6 EXIT SETUP MENU


System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
Save, Restore, and Exit Setup
Save Settings and Restart [Enter]
Exit Setup Without Saving Changes [Enter]
Reload Factory-Defaults and Restart [Enter]
Save, Restore, and Exit Setup - Use Permanent Storage
Save Settings, Store to Flash and Restart [Enter]
Load Settings from Flash and Restart [Enter]
Clear Settings in Flash [Enter]
Press ENTER to save changes and reboot system.
Embedded BIOS(R) w/StrongFrame(R) Technology - (c)2008 Phoenix Technologies Ltd

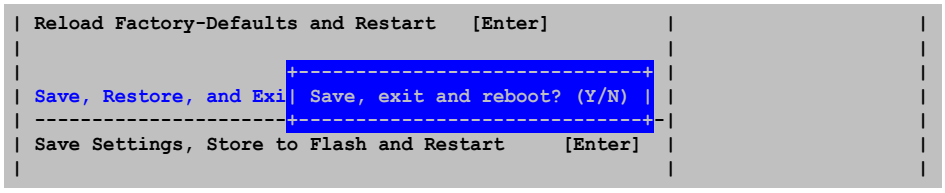
The Exit Setup Menu allows the user to manage the BIOS settings. BIOS settings are typically stored in the battery-backed CMOS RAM. In addition, they can also be stored to Flash (Permanent Storage).

3.6.1 SAVE, RESTORE AND EXIT SETUP

3.6.1.1 SAVE SETTINGS AND RESTART

Saves the current settings to CMOS and reboots the system.

After pressing <ENTER>, the following confirmation dialog appears:

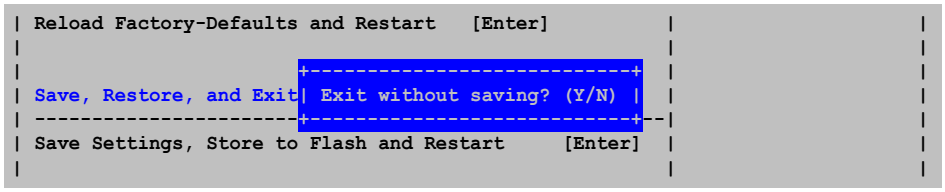

Reload Factory-Defaults and Restart [Enter]
Save, Restore, and Exi
Save, exit and reboot? (Y/N)
Save Settings, Store to Flash and Restart [Enter]

Pressing <Y> saves the settings to CMOS and reboots the system.
Pressing <N> aborts the action and returns to the Exit Setup Menu.

3.6.1.2 EXIT SETUP WITHOUT SAVING CHANGES

Discards any changes to the settings and exits BIOS setup.

After pressing <ENTER>, the following confirmation dialog appears:


Reload Factory-Defaults and Restart [Enter]
Save, Restore, and Exit
Exit without saving? (Y/N)
Save Settings, Store to Flash and Restart [Enter]

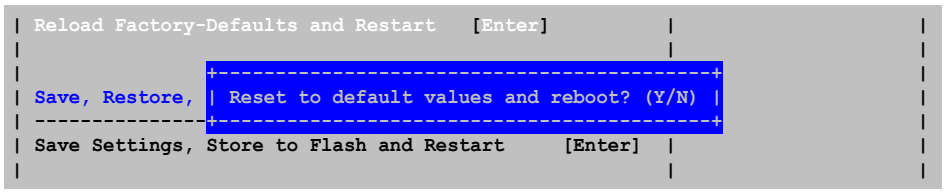
Pressing <Y> leaves the setup without saving any changes.
Pressing <N> aborts the action and returns to the Exit Setup Menu.

3.6.1.3 RELOAD FACTORY-DEFAULTS AND RESTART

Loads the factory default settings and reboots the system.

NOTE: The time and date values remain unaffected when the factory defaults are loaded.

After pressing <ENTER>, the following confirmation dialog appears:


Reload Factory-Defaults and Restart [Enter]
Save, Restore,
Reset to default values and reboot? (Y/N)
Save Settings, Store to Flash and Restart [Enter]

Pressing <Y> loads the factory default BIOS settings and reboots the system.
Pressing <N> aborts the action and returns to the Exit Setup Menu.

3.6.2 SAVE, RESTORE AND EXIT SETUP – USE PERMANENT STORAGE

These options control the storing of CMOS settings in both CMOS RAM and Flash.

Both CMOS RAM and Flash are non-volatile memories. They retain the settings when the system is powered down.

The difference between the two technologies is that Flash does not need any power source to retain its contents whereas CMOS RAM must be powered by the CMOS battery. If the CMOS battery is dead, removed or disabled, the CMOS RAM will be corrupt, and the BIOS settings are lost. The contents of the Flash however is not affected by such an event.

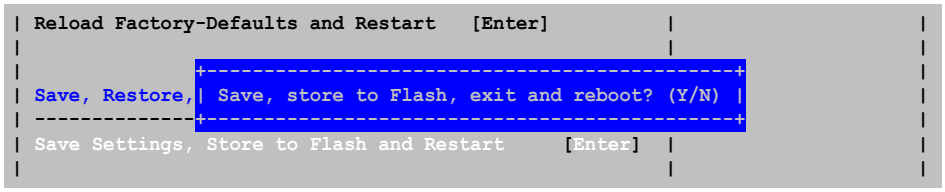
The contents of the CMOS RAM is checked at POST. If the BIOS detects that the CMOS RAM is corrupt, it checks whether the Flash contains a valid set of CMOS settings. If this is the case, the BIOS loads these settings into the CMOS RAM. If not, the BIOS loads the factory default values.

NOTE: The time and date values are not stored in the Flash. Whenever the CMOS settings are loaded from the Flash due to a corrupt CMOS RAM, the date will be reset to the BIOS build date and the time will be reset to 00:00:00.

3.6.2.1 SAVE SETTINGS, STORE TO FLASH AND RESTART

Saves the current settings to CMOS and to Flash and reboots the system.

After pressing <ENTER>, the following confirmation dialog appears:

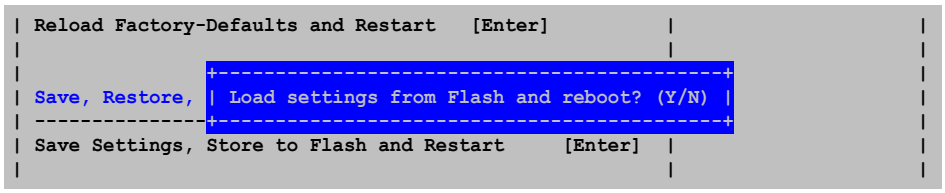

Reload Factory-Defaults and Restart [Enter]
Save, Restore,
Save, store to Flash, exit and reboot? (Y/N)
Save Settings, Store to Flash and Restart [Enter]

Pressing <Y> saves the settings to CMOS and Flash and reboots the system.
Pressing <N> aborts the action and returns to the Exit Setup Menu.

3.6.2.2 LOAD SETTINGS FROM FLASH AND RESTART

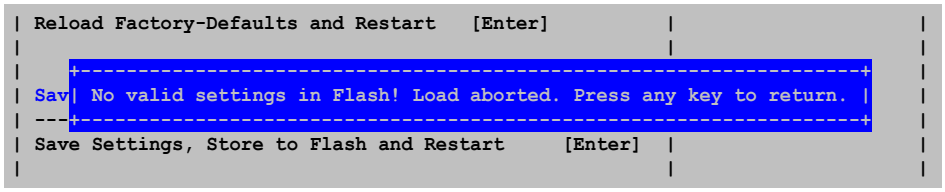
Loads the settings from Flash into CMOS.

After pressing <ENTER>, the following confirmation dialog appears:

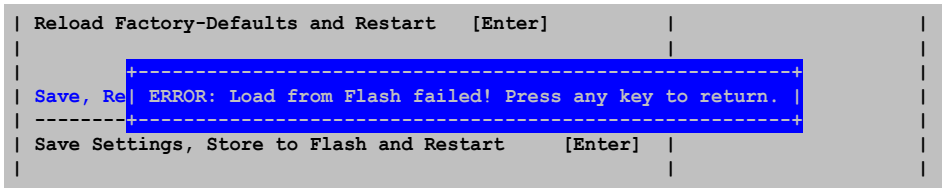

Reload Factory-Defaults and Restart [Enter]
Save, Restore,
Load settings from Flash and reboot? (Y/N)
Save Settings, Store to Flash and Restart [Enter]

Pressing <Y> loads the settings from Flash to CMOS and reboots the system.
Pressing <N> aborts the action and returns to the Exit Setup Menu.

If the Flash does not contain valid BIOS settings, the command will not be executed. The following message indicates this:


Reload Factory-Defaults and Restart [Enter]
No valid settings in Flash! Load aborted. Press any key to return.
Save Settings, Store to Flash and Restart [Enter]

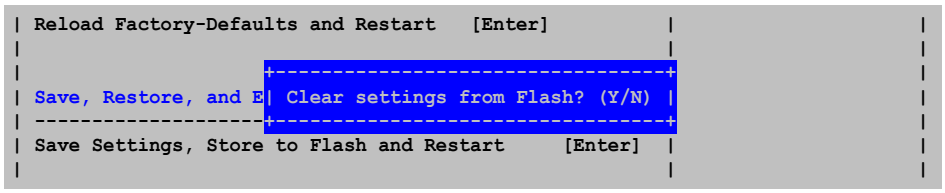
If loading the settings from Flash failed, the following message appears:


Reload Factory-Defaults and Restart [Enter]
ERROR: Load from Flash failed! Press any key to return.
Save Settings, Store to Flash and Restart [Enter]

3.6.2.3 CLEAR SETTINGS IN FLASH

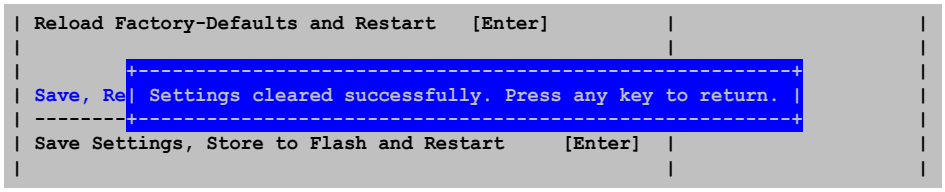
Clears the part of the Flash that holds CMOS settings.

After pressing <ENTER>, the following confirmation dialog appears:

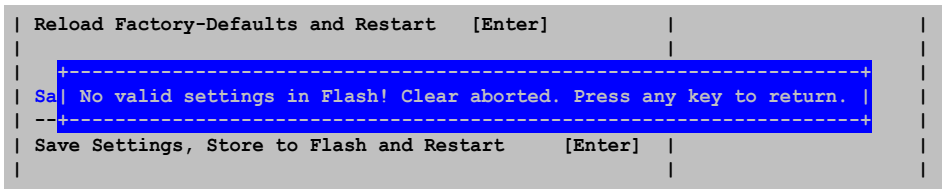


Pressing <Y> erases the settings from the Flash and returns to the Exit Setup Menu.
Pressing <N> aborts the action and returns to the Exit Setup Menu.

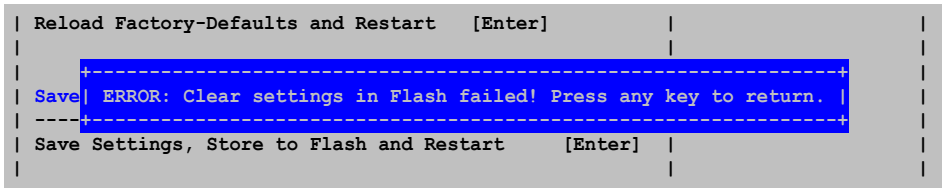
The following message indicates that the Flash has been successfully cleared:


Reload Factory-Defaults and Restart [Enter]
Settings cleared successfully. Press any key to return.
Save Settings, Store to Flash and Restart [Enter]

If the Flash does not contain valid BIOS settings, the command will not be executed. The following message indicates this:

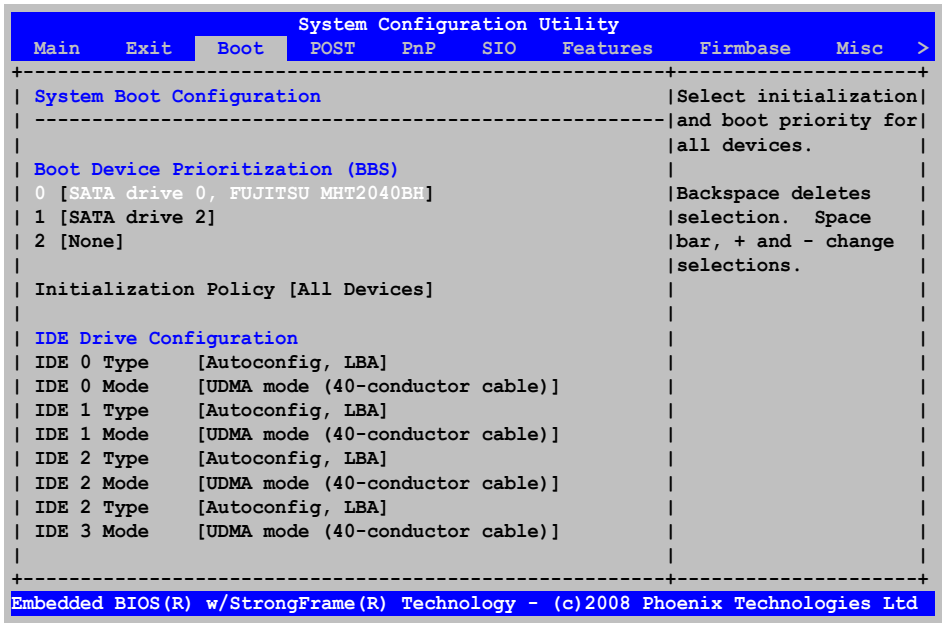

Reload Factory-Defaults and Restart [Enter]
No valid settings in Flash! Clear aborted. Press any key to return.
Save Settings, Store to Flash and Restart [Enter]

If clearing the settings failed, the following message appears:


Reload Factory-Defaults and Restart [Enter]
ERROR: Clear settings in Flash failed! Press any key to return.
Save Settings, Store to Flash and Restart [Enter]

3.7 BOOT SETUP MENU

The Boot Setup Menu is where the system's boot order is defined. Mass storage drives are configured here as well as the fundamental operating modes of the onboard mass storage controllers.


System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
System Boot Configuration
Boot Device Prioritization (BBS)
0 [SATA drive 0, FUJITSU MHT2040BH]
1 [SATA drive 2]
2 [None]
Initialization Policy [All Devices]
IDE Drive Configuration
IDE 0 Type [Autoconfig, LBA]
IDE 0 Mode [UDMA mode (40-conductor cable)]
IDE 1 Type [Autoconfig, LBA]
IDE 1 Mode [UDMA mode (40-conductor cable)]
IDE 2 Type [Autoconfig, LBA]
IDE 2 Mode [UDMA mode (40-conductor cable)]
IDE 2 Type [Autoconfig, LBA]
IDE 3 Mode [UDMA mode (40-conductor cable)]
Select initialization and boot priority for all devices.
Backspace deletes selection. Space bar, + and - change selections.
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3.7.1 SYSTEM BOOT CONFIGURATION

3.7.1.1 BOOT DEVICE PRIORITIZATION (BBS)

This is the boot order table of the system. Each entry in this table represents a possible boot device. The table entries are numbered, the lowest number being the first boot device.

The following choices are available:

[USB Floppy]
[USB Hard Drive]
[USB CDROM Drive]
[IDE 0/Pri Master]*
[IDE 1/Pri Slave]*
[IDE 2/Sec Master]*
[IDE 3/Sec Slave]*
[SATA Drive 0]*
[SATA Drive 2]*
[Onboard RAID]*
[PXE Network Boot, Onboard LAN 1]
[PXE Network Boot, Onboard LAN 2]
[PC/104+ Slot 1]
[PC/104+ Slot 2]
[PC/104+ Slot 3]
[PC/104+ Slot 4]
[Enter BIOS Setup Screen]
[Reboot System]
[All other devices]

* depending on ICH ATA Controller Configuration

Depending on the BIOS configuration, some items may be missing. For example, USB devices are only listed if both 'Firmbase Environment' and 'USB Boot' are enabled (see to section 3.12).

The above list shows the generic device names. When a device has been detected successfully, its name will either replace the generic name or will be added to it, for example:

```
[USB Hard Drive]  →  [takeMS USB EasyII USB Device]
[SATA Drive 0]    →  [SATA Drive 0, FUJITSU MHT2040BH]
[Onboard RAID]    →  [Intel Volume0 card in Onboard RAID]
```

NOTE: For pre-OS and legacy environments (e.g. DOS), all devices that need to be accessible must be added to the Boot Device Prioritization list. For example, if a USB Floppy drive is used to load a Mass Storage driver (e.g. RAID) during Windows setup, `[USB Floppy]` must be one of the entries in the table (preferrably the last one if booting from the floppy drive is not required).

3.7.1.2 INITIALIZATION POLICY

This option controls how devices are initialized at POST. The execution of Option ROMs (such as RAID, Ethernet PXE) can be controlled with this option. For example, if PXE Network Boot is not selected in in the Boot Device Prioritization menu, the PXE Option ROM will not be executed, thus leaving room for other Option ROMs that might be present in the system to execute (e.g those on add-on cards).

Initialization Policy		
	Boot Devices Only	Only devices that are listed in the Boot Device Prioritization (BBS) menu are initialized.
default	All Devices	All devices are initialized.

3.7.1.3 IDE DRIVE CONFIGURATION

These settings configure PATA devices.
They are numbered 0 to 4 (Primary Master to Secondary Slave). The relationship between physical ports and BIOS names depends on the ICH ATA Controller configuration (see section 3.7.2).

Normally, these settings do not need to be changed, except when the default values do not work properly for a specific hard disk drive.

IDE x Type		
	Not installed	No drive installed.
default	Autoconfig	The 'Autoconfig' type performs the same query as 'Physical' (see below), but follows up by analyzing sector 0 and determining the geometry based on the MBR. **NOTE:** If the drive is not properly detected with this setting, use 'Autoconfig, LBA' instead.
	Autoconfig, Physical	The 'Physical' type queries the drive's geometry from the controller and uses it without further translation, if the drive is smaller than 528MB. If the drive is larger than 528MB, LBA translation is used.
	Autoconfig, LBA	The 'LBA' type always translates the drive's geometry according to the LBA standard, regardless of the drive's size.
	Autoconfig, Phoenix	The 'Phoenix' type queries the drive's geometry from the controller and translates it according to the Phoenix CHS convention.
IDE x Mode		
	Fastest supported mde	Configures the drive for the fastest supported mode.
	PIO mode	Configures the drive for PIO mode, ignoring any reported support for multi-word DMA or UDMA modes.
	Multi-word DMA mode	Configures the drive for multi-word DMA mode, ignoring any reported support for UDMA modes.
default	UDMA mode (40-concuctor cable)	Configures the drive for UDMA mode, limited to the maximum mode allowed with a 40-conductor cable (UDMA mode 2, equals UDMA/33).
	UDMA mode (80-conductor cable)	Configures the drive for UDMA mode, allowing modes acheivable with a 80-conductor cable. **NOTE:** The 44-pin IDE connector does not support a 80-conductor cable.

3.7.2 ICH ATA CONTROLLER CONFIGURATION

The Southbridge of the PIP contains a SATA and a PATA controller. These settings configure the operating modes of the controllers.

3.7.2.1 SATA CONTROLLER

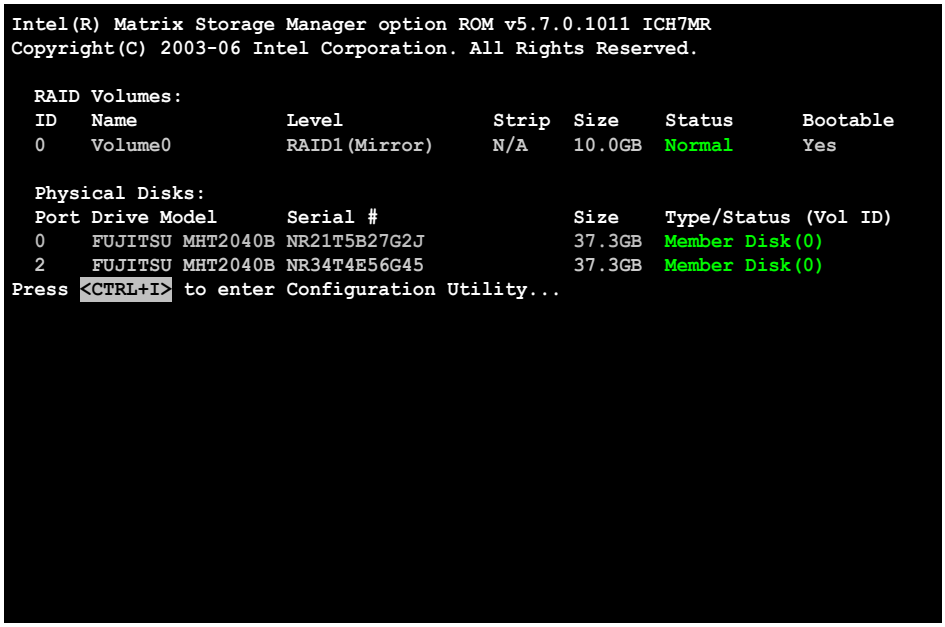
This option controls the operating mode of the SATA controller.

SATA Controller		
	Disabled	The SATA controller is disabled.
	Compatible Mode	SATA controller operates in Compatible Mode. This mode is supported by all operating systems.
default	Native Mode	SATA controller operates in Native Mode. **NOTE:** This mode is only supported by newer operating systems (e.g. Windows XP). Relationships between physical ports and BIOS names are as follows: PIP SATA0 port = 'SATA drive 0' PIP SATA1 port = 'SATA drive 2'
	AHCI Mode	SATA controller operates in AHCI mode. **NOTE:** This mode is only supported by newer operating systems (e.g. Windows XP) and may require special drivers for the operating system! Relationships between physical ports and BIOS names are as follows: PIP SATA0 port = 'SATA drive 0' PIP SATA1 port = 'SATA drive 2'
	RAID Mode	SATA controller operates in RAID mode. The RAID Option ROM will be activated to support booting from the RAID. **NOTE:** This mode is only supported by newer operating systems (e.g. Windows XP) and may require special drivers for the operating system! Relationships between physical ports and BIOS names are as follows: PIP SATA0 port = 'SATA drive 0' PIP SATA1 port = 'SATA drive 2'

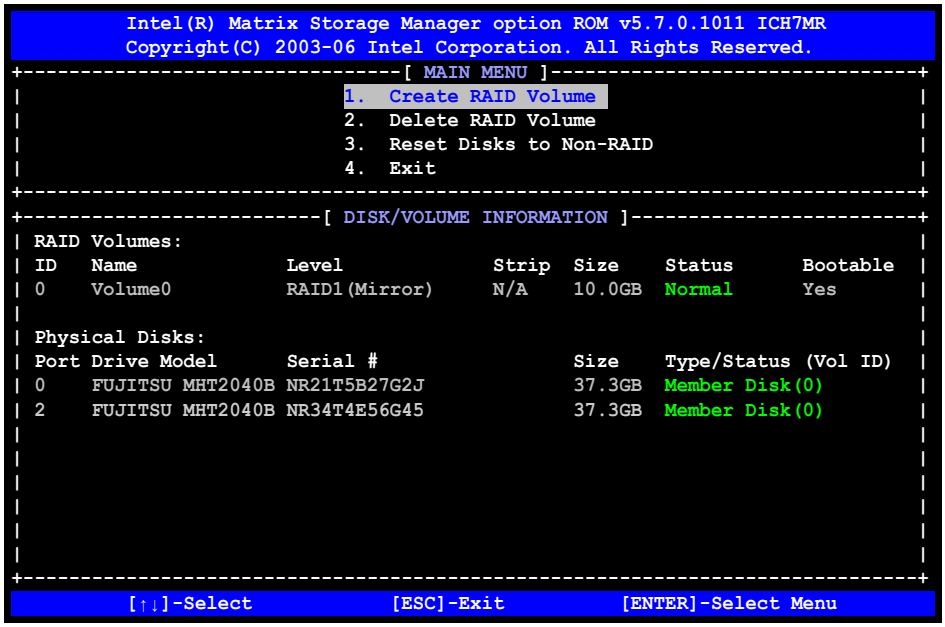
3.7.2.1.1 RAID

When the SATA controller is set to RAID mode, the RAID Option ROM will be activated.
In this mode, two SATA disks are required to create RAID-0 (Striping) or RAID-1 (Mirroring) sets.
The basic creation of RAID sets is done in the Configuration Utility of the RAID Option ROM.

The following screenshot shows the boot messages with a RAID1 set:


Intel(R) Matrix Storage Manager option ROM v5.7.0.1011 ICH7MR
Copyright(C) 2003-06 Intel Corporation. All Rights Reserved.
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID1(Mirror) N/A 10.0GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status (Vol ID)
0 FUJITSU MHT2040B NR21T5B27G2J 37.3GB Member Disk(0)
2 FUJITSU MHT2040B NR34T4E56G45 37.3GB Member Disk(0)
Press <CTRL+I> to enter Configuration Utility...

The RAID Configuration Utility can be started by pressing <CTRL+I>. This utility allows the creation of RAID sets so that the operating system can be installed onto that set.


Intel(R) Matrix Storage Manager option ROM v5.7.0.1011 ICH7MR
Copyright(C) 2003-06 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID1(Mirror) N/A 10.0GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status (Vol ID)
0 FUJITSU MHT2040B NR21T5B27G2J 37.3GB Member Disk(0)
2 FUJITSU MHT2040B NR34T4E56G45 37.3GB Member Disk(0)
[↑↓]-Select [ESC]-Exit [ENTER]-Select Menu

3.7.2.1.2 COMBINED MODE

If SATA Controller is set to 'Compatible Mode', this option appears.

Combined Mode		
	Disabled	Combined Mode is disabled.
default	P0/P2=Pri, PATA=Sec	The SATA controller controls both SATA ports and the PATA port. **NOTE:** This setting disables the 'PATA Controller' option. Relationships between physical ports and BIOS names are as follows: SATA0 port = 'IDE 0/Pri Master' SATA1 port = 'IDE 1/Pri Slave' PATA Master = 'IDE 2/Sec Master' PATA Slave = 'IDE 3/Sec Slave'

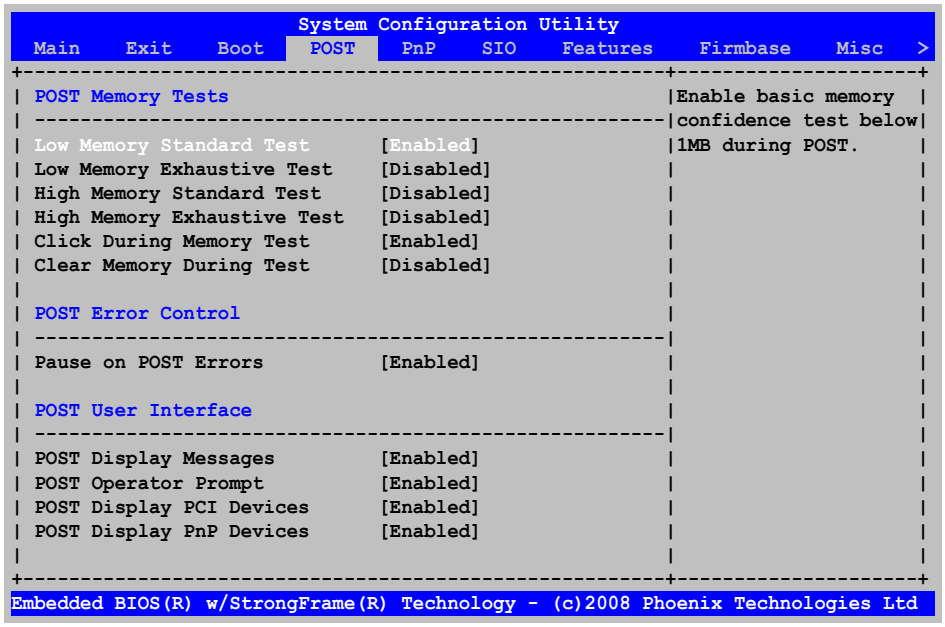
3.7.2.2 PATA CONTROLLER

This option controls the operating mode of the PATA controller.

NOTE: If 'Combined Mode is set to 'P0/P2=Pri, PATA=Sec', this option is not available.

PATA Controller		
	Disabled	The PATA controller is disabled.
default	Compatible Mode	PATA Controller operates in Compatible Mode. This mode is supported by all operating systems. Relationships between physical ports and BIOS names are as follows: PATA Master = 'IDE 0/Pri Master' PATA Slave = 'IDE 1/Pri Slave'
	Native Mode	SATA controller operates in Native Mode. **NOTE:** This mode is only supported by newer operating systems (e.g. Windows XP). Relationships between physical ports and BIOS names are as follows: PATA Master = 'IDE 0/Pri Master' PATA Slave = 'IDE 1/Pri Slave'

3.8 POST SETUP MENU


System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
POST Memory Tests
Low Memory Standard Test [Enabled]
Low Memory Exhaustive Test [Disabled]
High Memory Standard Test [Disabled]
High Memory Exhaustive Test [Disabled]
Click During Memory Test [Enabled]
Clear Memory During Test [Disabled]
POST Error Control
Pause on POST Errors [Enabled]
POST User Interface
POST Display Messages [Enabled]
POST Operator Prompt [Enabled]
POST Display PCI Devices [Enabled]
POST Display PnP Devices [Enabled]
Enable basic memory confidence test below 1MB during POST.
Embedded BIOS(R) w/StrongFrame(R) Technology - (c)2008 Phoenix Technologies Ltd

3.8.1 POST MEMORY TESTS

3.8.1.1 LOW MEMORY STANDARD TEST

This option enables or disables standard memory tests below 1MB.

Low Memory Standard Test		
	Disabled	Do not test memory below 1MB at POST.
default	Enabled	Test memory below 1MB at POST.

3.8.1.2 LOW MEMORY EXHAUSTIVE TEST

This option enables or disables exhaustive memory tests below 1MB.

Low Memory Exhaustive Test		
default	Disabled	Do not exhaustively test memory below 1MB at POST.
	Enabled	Exhaustively test memory below 1MB at POST.

3.8.1.3 HIGH MEMORY STANDARD TEST

This option enables or disables standard memory tests above 1MB.

High Memory Standard Test		
default	Disabled	Do not test memory above 1MB at POST.
	Enabled	Test memory above 1MB at POST.

3.8.1.4 HIGH MEMORY EXHAUSTIVE TEST

This option enables or disables exhaustive memory tests above 1MB.

High Memory Standard Test		
default	Disabled	Do not exhaustively test memory above 1MB at POST.
	Enabled	Exhaustively test memory above 1MB at POST.

3.8.1.5 CLICK DURING MEMORY TEST

This option enables or disables clicking of the speaker (if equipped) during memory test.

Click During Memory Test		
default	Disabled	Do not click during memory test.
	Enabled	Click during memory test.

3.8.1.6 CLEAR MEMORY DURING TEST

This option enables or disables clearing of the memory during memory count-up.
When enabled, '0' are written to every memory location.
This option is provided for compatibility with legacy software that may rely on the memory being cleared after POST.

Clear Memory During Test		
default	Disabled	Do not clear memory during test.
	Enabled	Clear memory during test.

3.8.2 POST ERROR CONTROL

3.8.2.1 PAUSE ON POST ERRORS

This option enables or disables pause when errors are detected during POST. This gives the user the possibility to take an action (e.g. enter the BIOS setup) whenever an error occurs.

Pause on POST Errors		
	Disabled	Do not pause on POST errors.
default	Enabled	Pause on POST errors.

3.8.3 POST USER INTERFACE

3.8.3.1 POST DISPLAY MESSAGES

This option enables or disables messages during POST (i.e. PCI device listing).

POST Display Messages		
	Disabled	Do not display POST messages.
default	Enabled	Display POST messages.

3.8.3.2 POST OPERATOR PROMPT

This option enables or disables operator prompt during POST (i.e. '<DEL>=preboot menu').

POST Operator Prompt		
	Disabled	Do not display operator prompt.
default	Enabled	Display operator prompt.

3.8.3.3 DISPLAY PCI DEVICES

This option enables or disables the PCI device table at POST.

Display PCI Devices		
	Disabled	Do not display PCI device table.
default	Enabled	Display PCI device table.

3.8.3.4 DISPLAY PNP DEVICES

This option enables or disables the PnP device table at POST.

Display PnP Devices		
	Disabled	Do not display PnP device table.
default	Enabled	Display PnP device table.

3.8.4 POST DEBUGGING

This section is empty.

3.8.5 DEVICE INITIALIZATION

3.8.5.1 POST FLOPPY SEEK

This option enables or disables head seek on floppy drives.

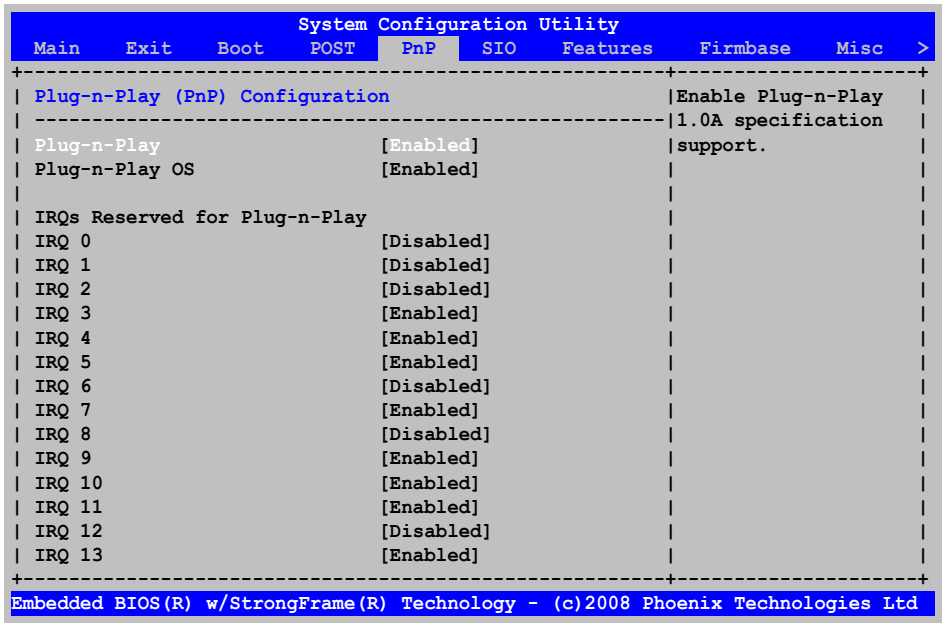
POST Floppy Seek		
default	Disabled	Do not perform floppy drive head seek.
	Enabled	Perform floppy drive head seek.

3.8.5.2 POST HARD DISK SEEK

This option enables or disables head seek on harddisk drives.

POST Hard Disk Seek		
	Disabled	Do not perform harddisk drive head seek.
default	Enabled	Perform harddisk drive head seek.

3.9 PNP SETUP MENU



3.9.1 PLUG-N-PLAY (PNP) CONFIGURATION

3.9.1.1 PLUG-N-PLAY

This option enables or disables Plug-n-Play.
If disabled, the operating system will not find PnP services in the BIOS.

Plug-n-Play		
	Disabled	Plug-n-Play is disabled.
default	Enabled	Plug-n-Play is enabled.

3.9.1.2 PLUG-N-PLAY OS

This option controls how PnP hardware is configured by the BIOS.
If disabled, the BIOS will configure PnP hardware.
If enabled, the BIOS will not configure PnP hardware as the OS is capable of that task.

Plug-n-Play OS		
	Disabled	Plug-n-Play OS is disabled.
default	Enabled	Plug-n-Play OS is enabled.

3.9.2 IRQS RESERVED FOR PLUG-N-PLAY

Each entry enables or disables the respective IRQ for exclusive use by PnP.

IRQs Reserved for Plug-n-Play			
IRQ0	default	Disabled	IRQ0 not reserved.
		Enabled	IRQ0 reserved for exclusive use by PnP.
IRQ1	default	Disabled	IRQ1 not reserved.
		Enabled	IRQ1 reserved for exclusive use by PnP.
IRQ2	default	Disabled	IRQ2 not reserved.
		Enabled	IRQ2 reserved for exclusive use by PnP.
IRQ3		Disabled	IRQ3 not reserved.
	default	Enabled	IRQ3 reserved for exclusive use by PnP.
IRQ4		Disabled	IRQ4 not reserved.
	default	Enabled	IRQ4 reserved for exclusive use by PnP.
IRQ5		Disabled	IRQ5 not reserved.
	default	Enabled	IRQ5 reserved for exclusive use by PnP.
IRQ6	default	Disabled	IRQ6 not reserved.
		Enabled	IRQ6 reserved for exclusive use by PnP.
IRQ7		Disabled	IRQ7 not reserved.
	default	Enabled	IRQ7 reserved for exclusive use by PnP.
IRQ8	default	Disabled	IRQ8 not reserved.
		Enabled	IRQ8 reserved for exclusive use by PnP.
IRQ9		Disabled	IRQ9 not reserved.
	default	Enabled	IRQ9 reserved for exclusive use by PnP.
IRQ10		Disabled	IRQ10 not reserved.
	default	Enabled	IRQ10 reserved for exclusive use by PnP.
IRQ11		Disabled	IRQ11 not reserved.
	default	Enabled	IRQ11 reserved for exclusive use by PnP.
IRQ12	default	Disabled	IRQ12 not reserved.
		Enabled	IRQ12 reserved for exclusive use by PnP.
IRQ13		Disabled	IRQ13 not reserved.
	default	Enabled	IRQ13 reserved for exclusive use by PnP.
IRQ14	default	Disabled	IRQ14 not reserved.
		Enabled	IRQ14 reserved for exclusive use by PnP.
IRQ15	default	Disabled	IRQ15 not reserved.
		Enabled	IRQ15 reserved for exclusive use by PnP.

3.9.3 DMA CHANNELS RESERVED FOR PLUG-N-PLAY

Each entry enables or disables the respective DMA channel for exclusive use by PnP.

DMA Channels Reserved for Plug-n-Play			
DMA0	default	Disabled	DMA0 not reserved.
		Enabled	DMA0 reserved for exclusive use by PnP.
DMA1	default	Disabled	DMA1 not reserved.
		Enabled	DMA1 reserved for exclusive use by PnP.
DMA2	default	Disabled	DMA2 not reserved.
		Enabled	DMA2 reserved for exclusive use by PnP.
DMA3		Disabled	DMA3 not reserved.
	default	Enabled	DMA3 reserved for exclusive use by PnP.
DMA4		Disabled	DMA4 not reserved.
	default	Enabled	DMA4 reserved for exclusive use by PnP.
DMA5		Disabled	DMA5 not reserved.
	default	Enabled	DMA5 reserved for exclusive use by PnP.
DMA6		Disabled	DMA6 not reserved.
	default	Enabled	DMA6 reserved for exclusive use by PnP.
DMA7		Disabled	DMA7 not reserved.
	default	Enabled	DMA7 reserved for exclusive use by PnP.

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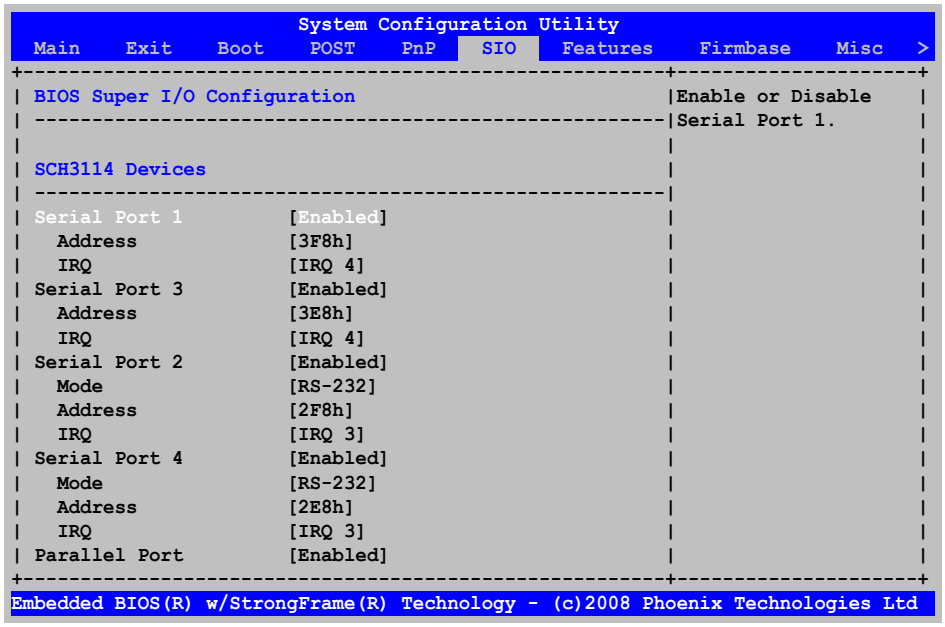
3.10 SIO SETUP MENU

The SIO Setup Menu configures the devices of the PIP's SCH3114 Super I/O device (Serial ports and Parallel port).



3.10.1 SERIAL PORT 1 SETTINGS

Serial Port 1	Enables / Disables Serial Port 1	
	Disabled	Serial Port 1 is disabled. The Serial Port 1 options described below become inactive.
default	Enabled	Serial Port 1 is enabled (RS232 mode)
Address	Selects Serial Port 1 I/O base address	
default	03F8h	Use I/O base address 03F8h
	02F8h	Use I/O base address 02F8h
	03E8h	Use I/O base address 03E8h
	02E8h	Use I/O base address 02E8h
	0220h	Use I/O base address 0220h
	0228h	Use I/O base address 0228h
	0238h	Use I/O base address 0238h
	0338h	Use I/O base address 0338h
IRQ	Selects Serial Port 1 IRQ	
	3	Use IRQ 3
default	4	Use IRQ 4 (default: shared[1] with Serial Port 3)
	5	Use IRQ 5
	7	Use IRQ 7
	11	Use IRQ 11

1 *Some operating systems are not capable of sharing interrupts between two serial ports. In such cases, select a unique interrupt for each serial port, e.g. Serial Port 1 = IRQ4, Serial Port 3 = IRQ11.*

3.10.2 SERIAL PORT 3 SETTINGS

Serial Port 3	Enables / Disables Serial Port 3	
	Disabled	Serial Port 3 is disabled. The Serial Port 3 options described below become inactive.
default	Enabled	Serial Port 3 is enabled (RS232 mode)
Address	Selects Serial Port 3 I/O base address	
	03F8h	Use I/O base address 03F8h
	02F8h	Use I/O base address 02F8h
default	03E8h	Use I/O base address 03E8h
	02E8h	Use I/O base address 02E8h
	0220h	Use I/O base address 0220h
	0228h	Use I/O base address 0228h
	0238h	Use I/O base address 0238h
	0338h	Use I/O base address 0338h
IRQ	Selects Serial Port 3 IRQ	
	3	Use IRQ 3
default	4	Use IRQ 4 (default: shared[2] with Serial Port 1)
	5	Use IRQ 5
	7	Use IRQ 7
	11	Use IRQ 11

3.10.3 SERIAL PORT 2 SETTINGS

NOTE: In order to use Serial Port 2, the PIP must be equipped with either a SERIF-1 module (for RS-232) or a SERIF-2 module for RS-485/RS-422).

Serial Port 2	Selects Serial Port 2 mode	
	Disabled	Serial Port 2 is disabled. The Serial Port 2 options described below become inactive.
default	RS-232	RS232 mode (requires SERIF-1 module)
	RS-485 Half Duplex	RS485 half–duplex mode (requires SERIF-2 module)
	RS-485 Full Duplex	RS485 / RS422 full-duplex mode (requires SERIF-2 module)
Address	Selects Serial Port 2 I/O base address	
	03F8h	Use I/O base address 03F8h
default	02F8h	Use I/O base address 02F8h
	03E8h	Use I/O base address 03E8h
	02E8h	Use I/O base address 02E8h
IRQ	Selects Serial Port 2 IRQ	
default	3	Use IRQ 3 (default: shared[3] with Serial Port 4)
	4	Use IRQ 4
	5	Use IRQ 5
	7	Use IRQ 7
	11	Use IRQ 11

2 *Some operating systems are not capable of sharing interrupts between two serial ports. In such cases, select a unique interrupt for each serial port, e.g. Serial Port 1 = IRQ4, Serial Port 3 = IRQ11.*

3 *Some operating systems are not capable of sharing interrupts between two serial ports. In such cases, select a unique interrupt for each serial port, e.g. Serial Port 2 = IRQ3, Serial Port 4 = IRQ5.*

3.10.4 SERIAL PORT 4 SETTINGS

NOTE: In order to use Serial Port 4, the PIP must be equipped with either a SERIF-1 module (for RS-232) or a SERIF-2 module for RS-485/RS-422).

Serial Port 4	Selects Serial Port 4 mode	
	Disabled	Serial Port 2 is disabled. The Serial Port 2 options described below become inactive.
default	RS-232	RS232 mode (requires SERIF-1 module)
	RS-485 Half Duplex	RS485 half–duplex mode (requires SERIF-2 module)
	RS-485 Full Duplex	RS485 / RS422 full-duplex mode (requires SERIF-2 module)
Address	Selects Serial Port 2 I/O base address	
	03F8h	Use I/O base address 03F8h
	02F8h	Use I/O base address 02F8h
	03E8h	Use I/O base address 03E8h
default	02E8h	Use I/O base address 02E8h
IRQ	Selects Serial Port 2 IRQ	
default	3	Use IRQ 3 (default: shared[4] with Serial Port 2
	4	Use IRQ 4
	5	Use IRQ 5
	7	Use IRQ 7
	11	Use IRQ 11

4 *Some operating systems are not capable of sharing interrupts between two serial ports. In such cases, select a unique interrupt for each serial port, e.g. Serial Port 2 = IRQ3, Serial Port 4 = IRQ5.*

3.10.5 PARALLEL PORT SETTINGS

Parallel Port	Selects Parallel Port mode	
	Disabled	Parallel Port is disabled. The Parallel Port options described below become hidden.
default	SPP	Standard bidirectional mode
	Printer	Printer mode
	SPP / EPP 1.7	SPP and EPP 1.7 mode
	SPP / EPP 1.9	SPP and EPP 1.9 mode
	ECP	ECP mode
	ECP / EPP 1.7	ECP and EPP 1.7 mode
	ECP / EPP 1.9	ECP and EPP 1.9 mode
Address	Selects Parallel Port I/O base address	
default	0378h	Use I/O base address 0378h
	0278h	Use I/O base address 0278h
IRQ	Selects Parallel Port IRQ	
	3	Use IRQ 3
	4	Use IRQ 4
	5	Use IRQ 5
default	7	Use IRQ 7
	11	Use IRQ 11

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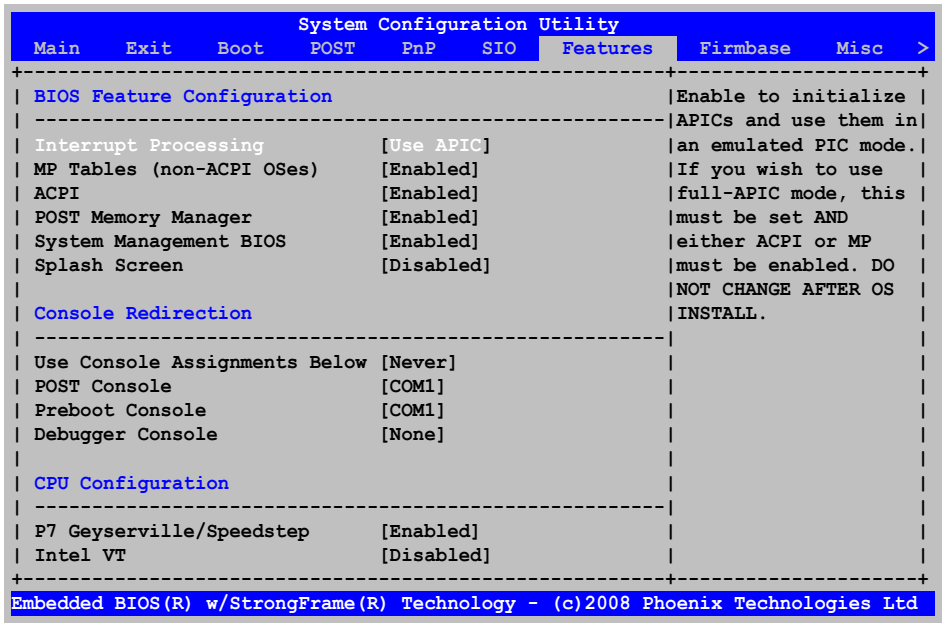
3.11 FEATURES SETUP MENU


System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
BIOS Feature Configuration
Interrupt Processing [Use APIC]
MP Tables (non-ACPI OSes) [Enabled]
ACPI [Enabled]
POST Memory Manager [Enabled]
System Management BIOS [Enabled]
Splash Screen [Disabled]
Console Redirection
Use Console Assignments Below [Never]
POST Console [COM1]
Preboot Console [COM1]
Debugger Console [None]
CPU Configuration
P7 Geyserville/Speedstep [Enabled]
Intel VT [Disabled]
Enable to initialize APICs and use them in an emulated PIC mode. If you wish to use full-APIC mode, this must be set AND either ACPI or MP must be enabled. DO NOT CHANGE AFTER OS INSTALL.
Embedded BIOS(R) w/StrongFrame(R) Technology - (c)2008 Phoenix Technologies Ltd

3.11.1 BIOS FEATURE CONFIGURATION

3.11.1.1 INTERRUPT PROCESSING

This option controls how interrupt processing is handled, either in legacy PIC (Programmable Interrupt Controller) mode or in APIC (Advanced Programmable Interrupt Controller) mode.
If enabled, the BIOS makes the necessary provisions for the OS to make use of the APIC. But it is the responsibility of the OS to make full use of the APIC mode.

Interrupt Processing		
	Use Legacy PIC	Legacy PIC is used.
default	Use APIC	APIC is used.

3.11.1.2 MP TABLES (NON-ACPI OSES)

This option enables MP tables which provide the OS with processor and APIC information, according to the MultiProcessor specification.

NOTE: If this option is enabled, 'Interrupt Processing' must be set to 'Use APIC'.

MP Tables (Non-ACPI OSes)		
	Disabled	MP tables disabled.
default	Enabled	MP tables enabled.

3.11.1.3 ACPI

This option enables support for Advanced Configuration and Power Interface (ACPI).

ACPI		
	Disabled	ACPI disabled.
default	Enabled	ACPI enabled.

3.11.1.4 POST MEMORY MANAGER

This option enables Post Memory Manager (PMM) which serves as memory allocation instance for Option ROMs.

POST Memory Manager		
	Disabled	POST Memory Manager disabled.
default	Enabled	POST Memory Manager enabled.

3.11.1.5 SYSTEM MANAGEMENT BIOS

This option enables System Management BIOS (SMBIOS) which exports information about the system to SMBIOS-aware applications.

System Management BIOS		
	Disabled	SMBIOS disabled.
default	Enabled	SMBIOS enabled.

3.11.1.6 SPLASH SCREEN

This option enables Graphical POST instead of the default text-based POST.

Splash Screen		
	Disabled	Splash Screen disabled.
default	Enabled	Splash Screen enabled.

3.11.2 CONSOLE REDIRECTION

3.11.2.1 USE CONSOLE ASSIGNMENTS BELOW

This option controls serial port console redirection.

Use a terminal emulation program (e.g. HyperTerminal) on a remote computer (connected to the PIP through a null modem cable) to view POST messages and intervene with POST, if desired, just like using the system's local keyboard and monitor.

If console redirection is active, it is routed to the serial port configured in 'POST Console' and 'Preboot Console'. Serial port parameters are:

- Baud rate: 115200 bps
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

Use Console Assignments Below		
	Never	Console redirection is always disabled.
default	On Remote User Detect	Console redirection is enabled if one of the following conditions is met: • One of the POST intervention keys (see section 3.2.3) has been pressed on the remote terminal during POST. • The integrated graphics device has been disabled (see section 2.5.1).
	Always	Console redirection is always enabled and uses the serial port configured in 'POST Console' and 'Preboot Console'.

3.11.2.2 POST CONSOLE

Select the serial port to which POST messages are routed when Console Redirection is active.

NOTE: It is recommended to use the same serial port as 'Preboot Console' below.

POST Console		
	None	Do not use a POST console.
default	COM1	Use COM1 as POST console.
	COM2	Use COM2 as POST console.
	COM3	Use COM3 as POST console.
	COM4	Use COM4 as POST console.

3.11.2.3 PREBOOT CONSOLE

Select the serial port to which Preboot messages (BIOS Setup Menu) are routed when Console Redirection is active.

NOTE: It is recommended to use the same serial port as 'POST Console' above.

Preboot Console		
	None	Do not use a Preboot console.
default	COM1	Use COM1 as Preboot console.
	COM2	Use COM2 as Preboot console.
	COM3	Use COM3 as Preboot console.
	COM4	Use COM4 as Preboot console.

3.11.2.4 DEBUGGER CONSOLE

This setting is not used and should be left at the default value.

Debugger Console		
default	None	Do not use a Debugger console.
	COM1	Use COM1 as Debugger console.
	COM2	Use COM2 as Debugger console.
	COM3	Use COM3 as Debugger console.
	COM4	Use COM4 as Debugger console.

3.11.3 CPU CONFIGURATION

3.11.3.1 P7 GEYSERVILLE/SPEEDSTEP

This option controls SpeedStep of the PIP's Intel Core (2) Duo CPU.

If enabled, the OS can control the CPU speed based on its policies (e.g. adapting to CPU load or running at maximum speed for optimal performance).

P7 Geyserville/SpeedStep		
	Disabled	P7 Geyserville/SpeedStep disabled. CPU runs fixed at slowest speed.
default	Enabled	P7 Geyserville/SpeedStep enabled. CPU speed adapts to CPU load.

3.11.3.2 INTEL VT

This option enables Intel Virtualization Technology (VT).

NOTE: Whenever this setting is changed, a power cycle is required to activate the new setting. So after changing this setting and saving to CMOS, the system needs to be switched off and on.

Intel VT		
	Disabled	Virtualization Technology disabled.
default	Enabled	Virtualization Technology enabled.

3.11.3.3 MICROCODE UPDATE

This option enables CPU microcode updates to be loaded.

Microcode Update		
	Disabled	CPU microcode updates disabled.
default	Enabled	CPU microcode updates enabled.

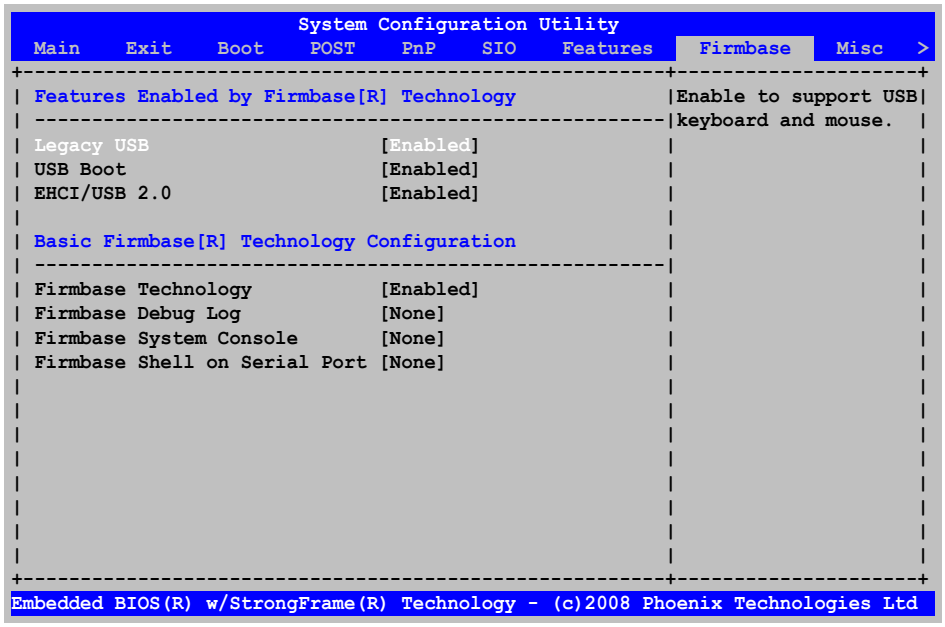
3.11.3.4 CORE MULTI-PROCESSING

This option enables core multi-processing. If disabled, the second CPU core will be invisible to software.

Core Multi-Processing		
	Disabled	Core multi-processing disabled.
default	Enabled	Core multi-processing enabled.

3.12 FIRMBASE SETUP MENU

The Firmbase Setup Menu configures Firmbase Technology and its components. Firmbase technology is based on System Management Mode (SMM) and all its components run in SMM.


System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
Features Enabled by Firmbase[R] Technology
Legacy USB [Enabled]
USB Boot [Enabled]
EHCI/USB 2.0 [Enabled]
Basic Firmbase[R] Technology Configuration
Firmbase Technology [Enabled]
Firmbase Debug Log [None]
Firmbase System Console [None]
Firmbase Shell on Serial Port [None]
Enable to support USB keyboard and mouse.
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3.12.1 FEATURES ENABLED BY FIRMBASE[R] TECHNOLOGY

All these features require that Firmbase Technology is activated. If it is disabled, the remaining options in the Firmbase Setup Menu are disabled.

3.12.1.1 LEGACY USB

This option enables support for USB keyboards and mice in legacy environments, such as DOS and the BIOS Setup.

Legacy USB		
	Disabled	USB Legacy device support disabled.
default	Enabled	USB Legacy device support enabled.

3.12.1.2 USB BOOT

This option enables boot support for USB mass storage devices.
If disabled, USB devices cannot be selected as boot devices in Boot Setup Menu.

NOTE: If you experience problems with a certain USB device, please disable EHCI/USB 2.0 (see section 3.12.1.3). If this does not help, try a different USB device. There is a vast variety of USB devices available on the market, and some of them may prove incompatible with the USB host controller of the PIP20/PIP22.

USB Boot		
	Disabled	USB Boot support disabled.
default	Enabled	USB Boot support enabled.

3.12.1.3 EHCI/USB 2.0

This option enables support for EHCI / USB 2.0.

This option can be used in case a certain USB 2.0 device does not work properly. By disabling this option, the device will be limited to USB 1.1 (aka USB 2.0 Full-Speed) mode instead of USB 2.0 Hi-Speed mode.

EHCI/USB 2.0		
	Disabled	EHCI/USB 2.0 support disabled.
default	Enabled	EHCI/USB 2.0 support enabled.

3.12.2 BASIC FIRMBASE[R] TECHNOLOGY CONFIGURATION

3.12.2.1 FIRMBASE TECHNOLOGY

This option enables Firmbase Technology which introduces features such as Legacy USB and USB Boot support.

NOTE: Enabling Firmbase Technology implicitly enables System Management Mode (SMM) because all the features are based on SMM and cannot run without it.
Due to its nature, SMM may cause problems if the application requires hard real time capabilities. The setup options 'LEGACY USB' (see section 3.12.1.1), 'USB BOOT' (see section 3.12.1.2) and 'EHCI/USB 2.0' (see section 3.12.1.3) are provided to individually disable SMM features in case of problems.

Firmbase Technology		
	Disabled	Firmbase Technology support disabled.
default	Enabled	Firmbase Technology support enabled.

3.12.2.2 FIRMBASE DEBUG LOG

This option is intended for debug purposes only and should be left at the default setting 'None'.

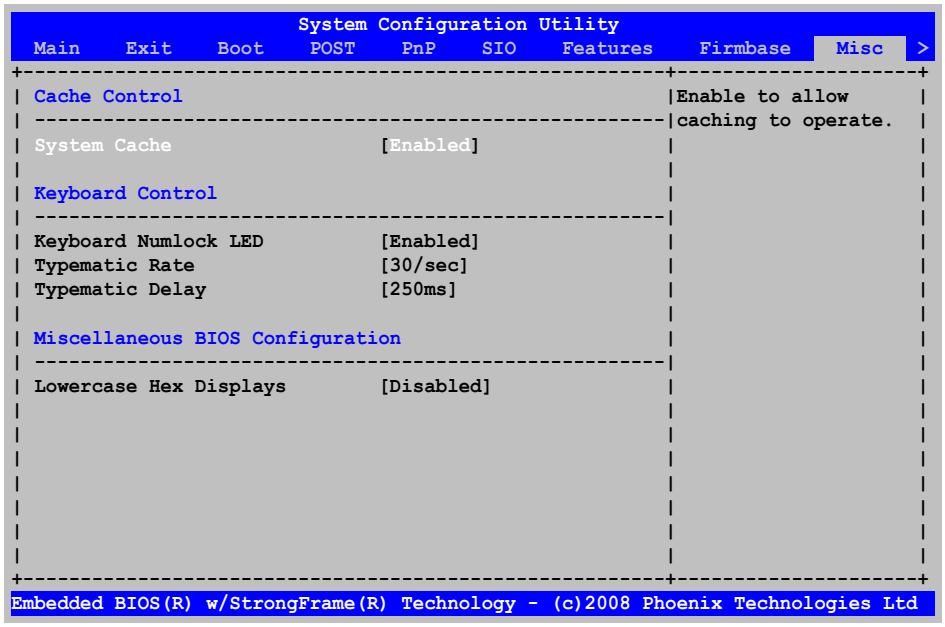
3.12.2.3 FIRMBASE SYSTEM CONSOLE

This option is intended for debug purposes only and should be left at the default setting 'None'.

3.12.2.4 FIRMBASE SHELL ON SERIAL PORT

This option is intended for debug purposes only and should be left at the default setting 'None'.

3.13 MISC SETUP MENU


System Configuration Utility
Main Exit Boot POST PnP SIO Features Firmbase Misc >
Cache Control
System Cache [Enabled]
Keyboard Control
Keyboard Numlock LED [Enabled]
Typematic Rate [30/sec]
Typematic Delay [250ms]
Miscellaneous BIOS Configuration
Lowercase Hex Displays [Disabled]
Enable to allow caching to operate.
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3.13.1 CACHE CONTROL

3.13.1.1 SYSTEM CACHE

This option enables the System Cache.

System Cache		
	Disabled	System Cache is disabled.
default	Enabled	System Cache is enabled.

3.13.2 KEYBOARD CONTROL

3.13.2.1 KEYBOARD NUMLOCK LED

This option enables keyboard Numlock.

Keyboard Numlock LED		
	Disabled	Numlock is disabled.
default	Enabled	Numlock is enabled.

3.13.2.2 TYPEMATIC RATE

This option specifies the rate at which characters are repeated when a key is pressed and held down.

Typematic Rate		
default	30/sec	Characters repeat 30 times per second.
	20/sec	Characters repeat 20 times per second.
	10/sec	Characters repeat 10 times per second.
	8/sec	Characters repeat 8 times per second.
	6/sec	Characters repeat 6 times per second.
	5/sec	Characters repeat 5 times per second.
	4/sec	Characters repeat 4 times per second.
	3/sec	Characters repeat 3 times per second.
	2/sec	Characters repeat 2 times per second.

3.13.2.3 TYPEMATIC DELAY

This option specifies the amount of time the key needs to be pressed and held down until the character repetition feature starts.

Typematic Delay		
default	250ms	Characters start to repeat after pressing a key for 250ms.
	500ms	Characters start to repeat after pressing a key for 500ms.
	750ms	Characters start to repeat after pressing a key for 750ms.
	1s	Characters start to repeat after pressing a key for 1s.

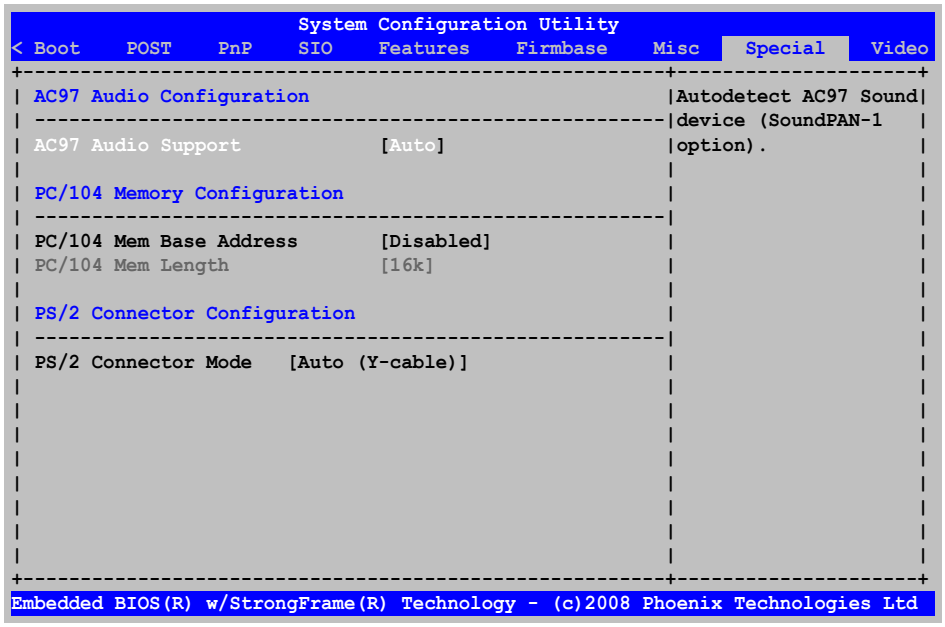
3.13.3 MISCELLANEOUS BIOS CONFIGURATION

3.13.3.1 LOWERCASE HEX DISPLAYS

This setting is not used and should be left at the default value.

Lowercase HEX Displays		
default	Disabled	Do not display hexadecimal numbers in debugger in lower case.
	Enabled	Display hexadecimal numbers in debugger in lower case.

3.14 SPECIAL SETUP MENU


System Configuration Utility
< Boot POST PnP SIO Features Firmbase Misc Special Video
AC97 Audio Configuration
AC97 Audio Support [Auto]
PC/104 Memory Configuration
PC/104 Mem Base Address [Disabled]
PC/104 Mem Length [16k]
PS/2 Connector Configuration
PS/2 Connector Mode [Auto (Y-cable)]
Autodetect AC97 Sound device (SoundPAN-1 option).
Embedded BIOS(R) w/StrongFrame(R) Technology - (c)2008 Phoenix Technologies Ltd

3.14.1 AC97 AUDIO CONFIGURATION

3.14.1.1 AC97 AUDIO SUPPORT

This option controls the onboard AC'97 audio device.

NOTE: This option is only useful if the MPL SoundPAN-1 option is installed.

AC97 Audio Support		
	Disabled	AC'97 is disabled.
default	Auto	AC'97 audio device is enabled automatically if the MPL SoundPAN-1 option is installed. If SoundPAN-1 is not present, the AC'97 device is disabled.

3.14.2 PC/104 MEMORY CONFIGURATION

3.14.2.1 PC/104 MEM BASE ADDRESS

This option reserves memory space for legacy PC/104 (ISA-based) cards.
The possible range for the PC/104 memory space is 000D0000h – 000DFFFFh (segments D000, D400, D800, DC00). Please refer to section 2.2 for more details about the memory map.

PC/104 Mem Base Address		
default	Disabled	PC/104 memory window is disabled
	D000	PC/104 memory window starts at segment address D000.
	D400	PC/104 memory window starts at segment address D400.
	D800	PC/104 memory window starts at segment address D800.
	DC00	PC/104 memory window starts at segment address DC00.

3.14.2.2 PC/104 MEM LENGTH

This option reserves memory space for legacy PC/104 (ISA-based) cards.

PC/104 Mem Length		
default	16k	PC/104 memory window size 16k (4000h)
	32k	PC/104 memory window size 32k (8000h).
	64k	PC/104 memory window size 64k (10000h).

3.14.3 PS/2 CONNECTOR CONFIGURATION

3.14.3.1 PS/2 CONNECTOR MODE

This option controls the PS/2 connector of the PIP.

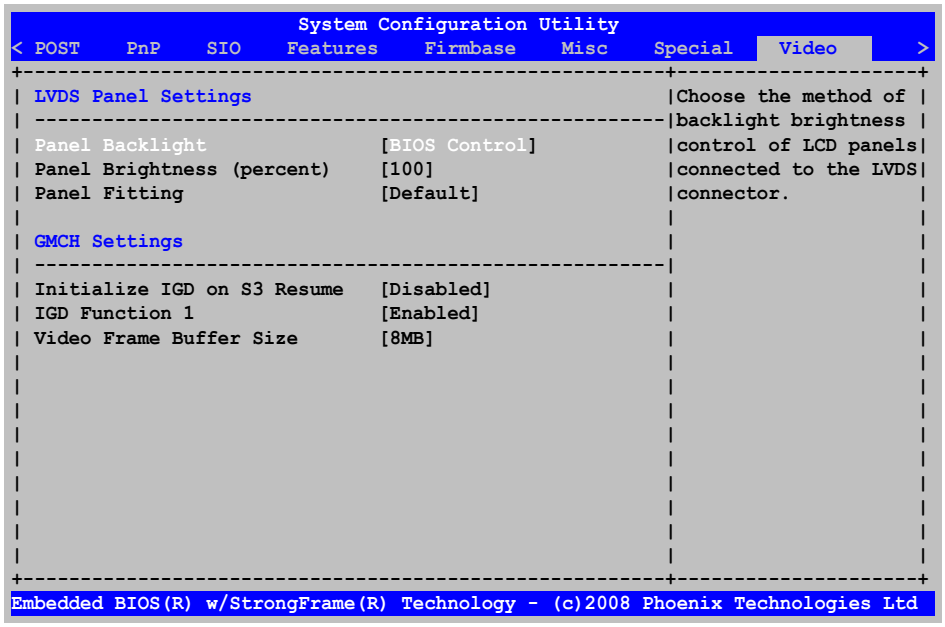
The PS/2 connector contains both the keyboard and the mouse signal pairs. To support different configurations, these signals can be swapped. The PIP BIOS offers automatic detection of the connected devices, but this feature can be disabled if required.

Keyboard and mouse devices can either be plugged directly into the PS/2 port or they can be used simultaneously with the help of a so-called Y cable.

Normally, the default setting 'Auto (Y-Cable)' works for any configuration. However, if the automatic detection does not work properly for a certain device or if additional devices such as KVM switches (Keyboard, Video, Mouse) are connected between the PIP and the keyboard/mouse, it may be necessary to turn off automatic detection and use one of the fixed options.

AC97 Audio Support		
default	Auto (Y-cable)	Automatically detect attached PS/2 device(s) and configure PS/2 port accordingly.
	Keyboard direct	Support keyboard plugged directly into the PS/2 connector. Mouse is also supported if Y-cable is used and the devices are connected properly. No automatic detection of PS/2 device(s).
	Mouse direct	Support mouse plugged directly into the PS/2 connector. Keyboard is also supported if Y-cable is used and the devices are connected properly. No automatic detection of PS/2 device(s).
	Mouse disabled	Support keyboard plugged directly into the PS/2 connector. Mouse is not supported. No automatic detection of PS/2 device(s).

3.15 VIDEO SETUP MENU



3.15.1 LVDS PANEL SETTINGS

These options control panels connected to the PIP via LVDS interface.
Please refer to section 2.5.2 for detailed information about the Flat Panel (LVDS) interface of the PIP.

NOTE: These options are only active if a LVDS panel is connected and properly configured via DIP switches. If the monitor is connected to the DVI-I port of the PIP, these options are inactive and do not affect the display output.

3.15.1.1 PANEL BACKLIGHT

This option defines how the backlight brightness level is controlled. If set to “BIOS Control”, the brightness can be adjusted with the option 'Panel Brightness (percent)'.

Panel Backlight		
	HW/App Control	Brightness is controlled by hardware or application.
default	BIOS Control	Brightness is controlled by BIOS setup.

3.15.1.2 PANEL BRIGHTNESS (PERCENT)

If 'Panel Backlight' is set to 'BIOS Control', the backlight brightness can be adjusted in 5% increments.

Panel Brightness (percent)		
	Minimum	Minimal brightness level.
	5	5% brightness level.
	10	10% brightness level.
	...	...
	...	[5% increments]
	...	...
	95	95% brightness level.
default	100	100% brightness level.

3.15.1.3 PANEL FITTING

This option controls the fitting of the panel contents.
If the native resolution of a panel does not correspond to the software resolution, the contents is either stretched to fit the native screen resolution or centered, which results in a black frame around the actual screen content.

Panel Backlight		
default	Default	Brightness is controlled by hardware or application.
	Center All Modes	Both Graphics and Text modes are centered.
	Stretch All Modes	Always fit the screen size.
	Stretch Text Modes	Text modes are stretched to fit the screen.
	Stretch Graphics Modes	Graphics Modes are stretched to fit the screen.

3.15.2 GMCH SETTINGS

3.15.2.1 INITIALIZE IGD ON S3 RESUME

This option defines whether the Integrated Graphics Device (IGD) is re-initialized upon a S3 resume.

Initialize IGD on S3 Resume		
default	Disabled	Do not re-initialize IGD on S3 resume.
	Enabled	Re-initialize IGD on S3 resume.

3.15.2.2 IGD FUNCTION 1

This option enables or disables Integrated Graphics Device (IGD) function 1 (PCI device Bus0 Dev2 Fun1).
Depending on the operating system and graphics drivers, it can be useful to disable IGD function 1.

IGD Function 1		
	Disabled	Integrated Graphics Device Function 1 is disabled.
default	Enabled	Integrated Graphics Device Function 1 is enabled.

3.15.2.3 VIDEO FRAME BUFFER SIZE

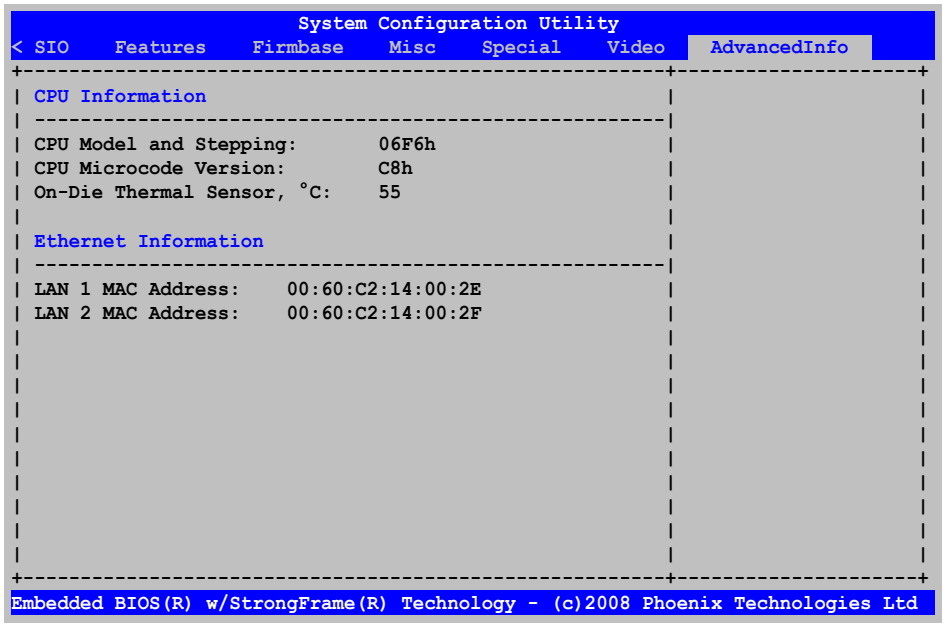
This option defines the initial size of the video frame buffer.

NOTE: This setting only applies to environments without Intel Graphics Driver, such as DOS.
Intel Graphics Drivers override this setting in order to provide a larger frame buffer to the operating system.

Video Frame Buffer Size		
	1MB	Initial frame buffer size is 1MB.
default	8MB	Initial frame buffer size is 8MB.

3.16 ADVANCED INFO SETUP MENU

The Advanced Info Setup Menu displays advanced information about the CPU and Ethernet controllers.


System Configuration Utility
< SIO Features Firmbase Misc Special Video AdvancedInfo
CPU Information
CPU Model and Stepping: 06F6h
CPU Microcode Version: C8h
On-Die Thermal Sensor, °C: 55
Ethernet Information
LAN 1 MAC Address: 00:60:C2:14:00:2E
LAN 2 MAC Address: 00:60:C2:14:00:2F
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3.16.1 CPU INFORMATION

3.16.1.1 CPU MODEL AND STEPPING

This is the CPU information, as returned by the CPUID instruction: family (6), model (F) and stepping (6).

NOTE: This information varies depending on the installed CPU type.

3.16.1.2 CPU MICROCODE VERSION

This shows the microcode version that is loaded in the system's CPU.

NOTE: This information varies depending on the installed CPU type and the BIOS version.

3.16.1.3 ON-DIE THERMAL SENSOR, °C

This is the current CPU temperature, in degrees Celsius.

3.16.2 ETHERNET INFORMATION

3.16.2.1 LAN 1 MAC ADDRESS

This is the Media Control Access (MAC) address of onboard LAN 1.

NOTE: If LAN 1 is disabled, the message 'Controller Disabled' will be displayed instead of the MAC address.

3.16.2.2 LAN 2 MAC ADDRESS

This is the Media Access Control (MAC) address of onboard LAN 2.

NOTE: If LAN 2 is disabled, the message 'Controller Disabled' will be displayed instead of the MAC address.

4 NETWORK BOOT (PXE)

The PIP BIOS supports booting from the two onboard Ethernet controllers using the PXE protocol. Network Boot can be selected as boot action in the Boot Device Prioritization (BBS) menu (please refer to section 3.7 for more information).

The PXE Network Boot Option ROM shows the following message:

```
Initializing Intel(R) Boot Agent GE v1.3.35
PXE 2.1 Build 087 (WfM 2.0)
Press Ctrl+S to enter the Setup Menu...
```

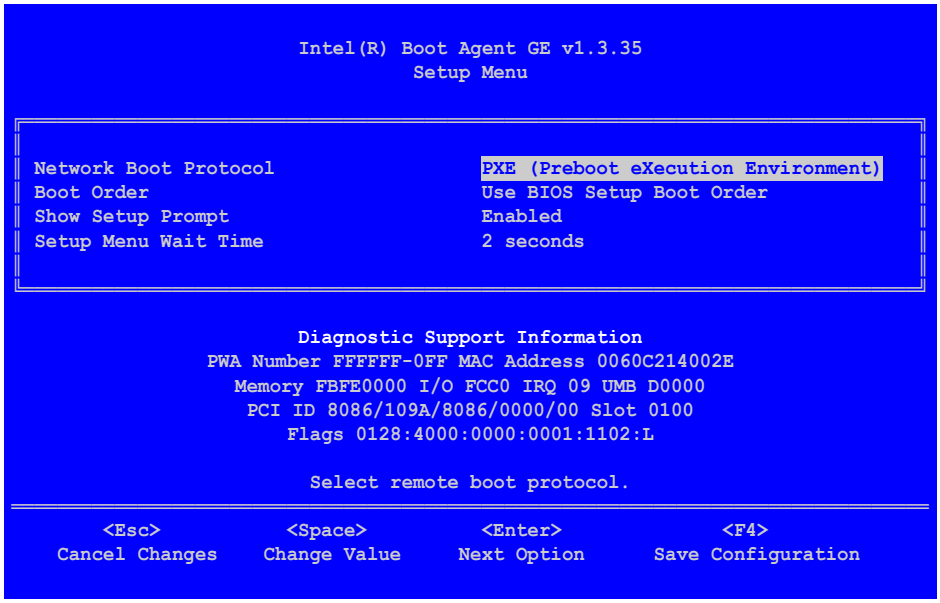
NOTE: If the boot message above does not appear, the PXE Option ROM is not executed which means that the system will not be able to boot from network.

If both Ethernet controllers are configured as boot actions, the PXE Option ROM will be executed twice (once for each Ethernet controller), so the boot message also appears twice.

4.1 PXE SETUP MENU

The PXE setup menu is entered by pressing CTRL+S when indicated by the PXE initialization message (see above).

NOTE: Each Ethernet controller contains its own configuration menu. Changes made for one Ethernet controller do not affect the other Ethernet controller!



The PXE setup menu contains configurable settings as well as information about the Ethernet controller (such as MAC address, PCI resource consumption etc.).

4.1.1 CONFIGURATION OPTIONS

Network Boot Protocol		
default	PXE (Preboot eXecution Environment)	Use PXE as boot protocol
Boot Order		
default	Use BIOS Setup Boot Order	Use the BIOS setup to define the boot order. Please refer to section 3.7 for more information.
Show Setup Prompt		
	Disabled	Do not show 'Press Ctrl+S to enter the Setup Menu...'
default	Enabled	Show 'Press Ctrl+S to enter the Setup Menu...'
Setup Menu Wait Time		
	0	Wait 0 sec for Ctrl+S
default	2	Wait 2 sec for Ctrl+S
	3	Wait 3 sec for Ctrl+S
	5	Wait 5 sec for Ctrl+S

4.1.2 KEY ASSIGNMENTS

The following keys are used in the PXE Setup Menu to navigate and modify settings:

Key	Action
[**ESC**]	Leave PXE Setup Menu and lose any changes.
[**SPACE**]	Change value of currently selected option.
[**ENTER**]	Jump to next option.
[**F4**]	Save changes and leave PXE Setup menu.

4.2 BOOTING FROM NETWORK

Setting up a server that provides bootable images for network clients is a complex task which is beyond the scope of this manual. The PIP merely makes available the feature of booting from a correctly configured boot server.
Please visit the Intel website at http://support.intel.com/support/network/adapter/pro100/bootagent/index.htm or search the internet for further information about PXE network booting.

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In case of sales information questions please send an email to sales@mpl.ch.
If you have a technical problem with a PIP, first please read the User Manual, the Technical Reference Manual and also this manual carefully. If you can't solve the problem on your own you can contact us for technical support per email at support@mpl.ch.

Our local Distributor: